WESTERN GAS

MODERN—

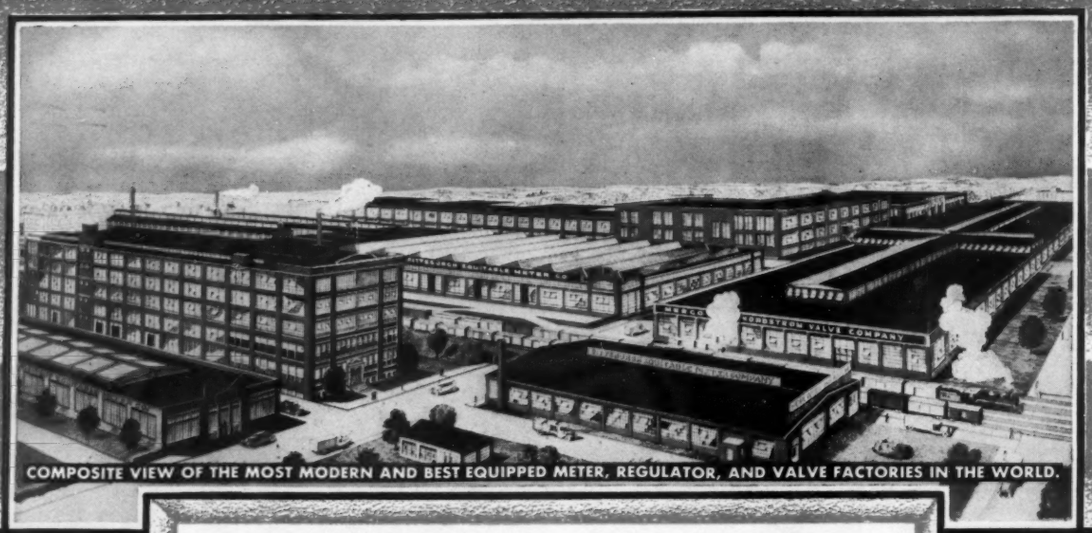
MODERNIZATION is the real spirit of pioneering. "Old timers" in the industry recognize an old and a new standby in gas control every time they see the name *Reynolds*. OLD, because *Reynolds* built a rapid and enviable reputation for quality back at the very start of the industry—NEW, because *Reynolds* still holds that reputation through the constructive improvement in gas control devices demanded by constantly changing conditions in the industry.

Old and new heads in gas engineering find it shrewd judgment to standardize on *Reynolds* gas control—the equipment whose development is synonymous with the progress of the gas industry.

"Recognized Gas Control Since 1892"

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA

OCT 16 1935



COMPOSITE VIEW OF THE MOST MODERN AND BEST EQUIPPED METER, REGULATOR, AND VALVE FACTORIES IN THE WORLD.

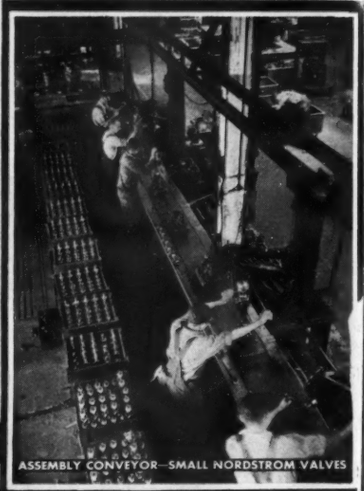
It is the duty of every employee to keep the Quality of

EMCO & NORDSTROM PRODUCTS

up to the High Standard that has established their reputation as the

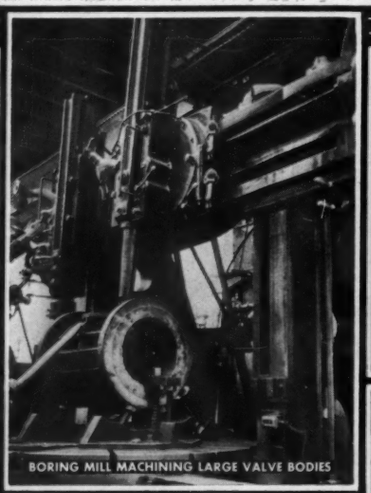
STANDARD of COMPARISON

REAMING OPERATIONS ON SEMI-AUTOMATICS IN OAKLAND FACTORY

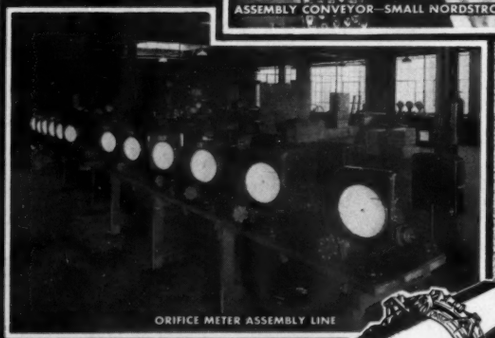


ASSEMBLY CONVEYOR—SMALL NORDSTROM VALVES

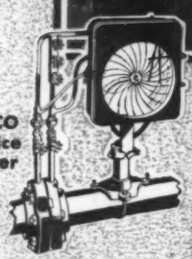
GENERAL VIEW PROVING ROOM



BORING MILL MACHINING LARGE VALVE BODIES

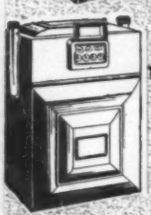


ORIFICE METER ASSEMBLY LINE



EMCO Orifice Meter

EMCO Bell Joint Clamp



EMCO Tin Meter

MACHINING LARGE METER AND REGULATOR CASTINGS

SECTION OF TIN METER DEPT

EMCO Large Capacity Pressed Steel Meter with Emcorector

NORDSTROM Lubricated Meter Cock

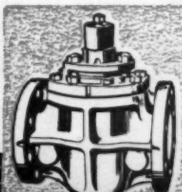
PITTSBURGH EQUITABLE METER CO.
MERCO NORDSTROM VALVE CO.

MAIN OFFICES PITTSBURGH, PA.

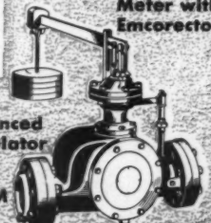
MEMPHIS	HOUSTON	TULSA
ATLANTA	PHILADELPHIA	CHICAGO
NEW YORK	LOS ANGELES	BUFFALO
COLUMBIA	KANSAS CITY	OAKLAND

EMCO Type "B" Ejector Service Regulator

EMCO Standard Domestic Meter

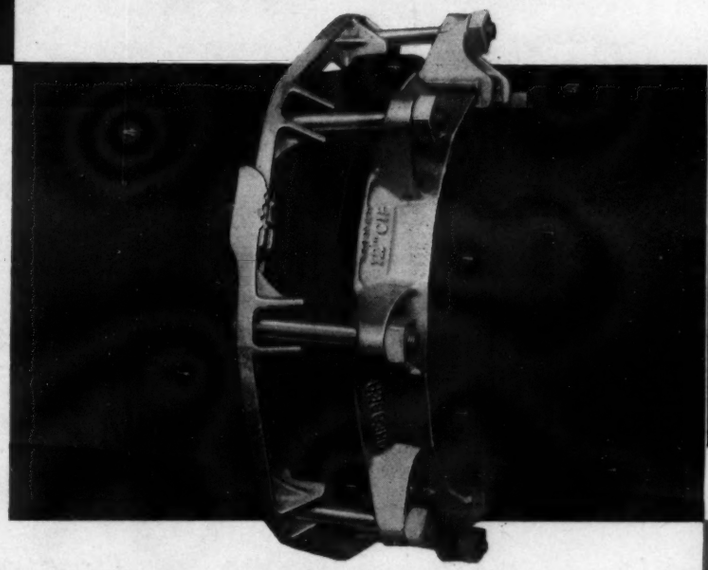


EMCO Balanced Valve Regulator

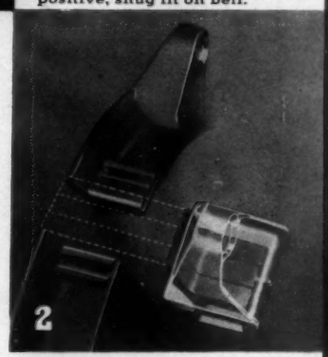


NORDSTROM Lubricated Plug Valve

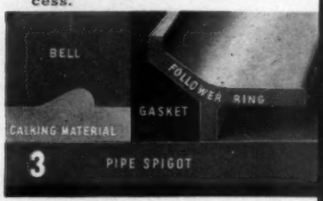
4 REASONS WHY..



Serrated ends of anchor-ring sections provide simple, accurate adjustment that insures positive, snug fit on bell.



Fillers permit wide range of adjustment of follower ring, and provide continuous gasket recess.



Large-section gasket, of exclusive Dresser compound, is closely confined by follower ring, insuring effective seal at every point.

By charting variations in gasket pressures, the Dresser Sealometer made it possible for Dresser engineers to design a Clamp having high minimum gasket pressure.

. . DRESSER Style 60 outperforms other appliances for making bell-and-spigot joints TIGHT

Whatever standard is used to measure clamp performance—dependability, efficiency, economy—the modern Dresser Bell-Joint Clamp breaks all records. • Its dependability is assured by a sturdy, scientific, *balanced* design—by the most durable materials—by fifty years of experience. Its efficiency is the result of new features: (a) adjustability to pipe diameter, (b) high minimum gasket pressure, and (c) a gasket compound made to render complete satisfaction under all conditions. The economy of Style 60 is a quality that becomes more and more evident as time goes on—for the repair it makes is a *permanent* one. *Write for folder BJ- 60.*

S. R. DRESSER MANUFACTURING CO.
BRADFORD · PENNSYLVANIA
In Canada: Dresser Manufacturing Company, Ltd., 32 Front St., W., Toronto, Ont.

DRESSER BELL-JOINT CLAMPS

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WESTERN GAS

"Reg. U. S. Pat. Off."

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"LONG LIFE PIPE"
with gas-tight mechanical joints

Cast iron bell-and-spigot pipe with mechanical joints meets the three major requirements of the distribution engineer—long life, low maintenance and a bottle-tight joint. The stuffing-box type mechanical joint, as made by members of this Association, has been proved gas-tight by rigid tests conducted by the laboratory of the American Gas Association.

The Cast Iron Pipe Research Ass'n, Thos. F. Wolfe, Research Engineer, 1015 Peoples Gas Bldg., Chicago, Ill.

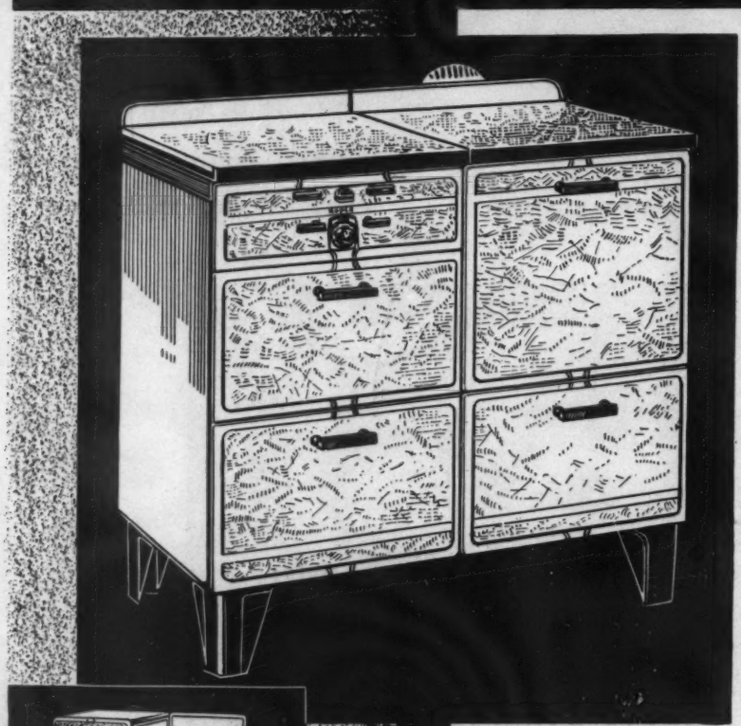
CAST IRON PIPE

METHODS OF EVALUATING BIDS NOW IN USE BY ENGINEERS RATE THE USEFUL LIFE OF CAST IRON PIPE AT 100 YEARS

TRADEMARK REG.

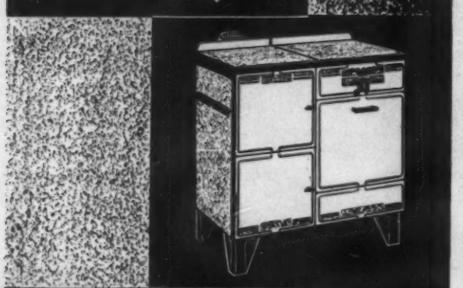
WIN *with*

WHY THE MAJORITY OF NATIONAL CONTEST



No. 19 Series—popular-priced table-top.

No. 9 Series—popular-priced console.



No. 14 Series—rapid-selling 36" table top.

No. 24 Series—DeLuxe table-top of conventional design.

THE STANDARD LINE

- **A model for every purse**
- **A size for every kitchen**
- **Features women want**
- **Variety in color trims and combinations for the most particular**

MODERN *in Every Respect*

The new, advanced Roper Gas Ranges are the complete fulfillment of all a modern gas range should **be** . . . should **have** . . . should **do.**

Insulated-Ventilated ovens, with Lifetime cooking chart on oven door lining . . . oven heat control . . . modern broiling equipment . . . easy-sliding utility drawers . . . sensationally efficient "EconoSpeed" burners, automatically ignited . . . "Air Stream" removable cooking top . . . new, modern hardware and color trims . . . extra conveniences every homemaker wants to own . . . all combine in the new Ropers to give UTMOST SATISFACTION, while saving time and money.

ROPER "ECONOSPEED" BURNER — fast, silent, non-clogging, flexible in adjustment, adaptable for all size utensils, economical.

50th ANNIVERSARY

ROPER

WINNERS FEATURED ROPER GAS RANGES

THE DELUXE LINE

- **Three cooking top arrangements**
- **Four, six, or eight top burners**
- **One big baking oven, one slide broiler with Astogril, and utility drawer, or**
- **Two big baking ovens with two Astogril broilers**

No More "Rumble Seat" *Cooking*

A family of five **can** take a 5000-mile automobile trip in a roadster with a rumble seat, sacrificing comfort, convenience, and pleasure.

So can a housewife "get by" with a single oven range and four top burners—but the modern way is to use a double-oven range with at least six top burners.

Roper DeLuxe models offer three different cooking top arrangements, two different arrangements of ovens and broilers.

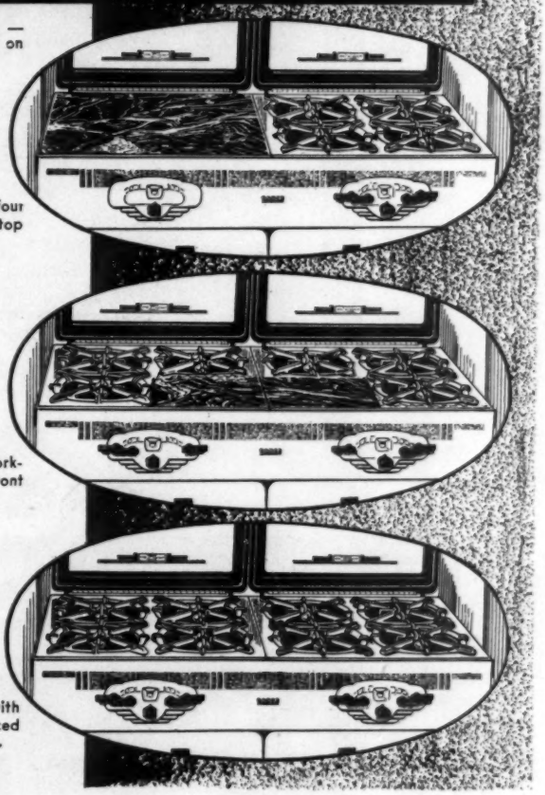
THE TREND IS TOWARD FULL AUTOMATIC COOKERY

Surveys prove that women are receptive to the idea of clock cookery. Now it's up to you to increase profits, give greater customer satisfaction by selling the idea in your community.

VISIT OUR CHICAGO SHOWROOMS AT 35 W. JACKSON BLVD.

GEO. D. ROPER CORPORATION
ROCKFORD ILLINOIS

No. 60 and 70 Series — finest DeLuxe table-top on the market.

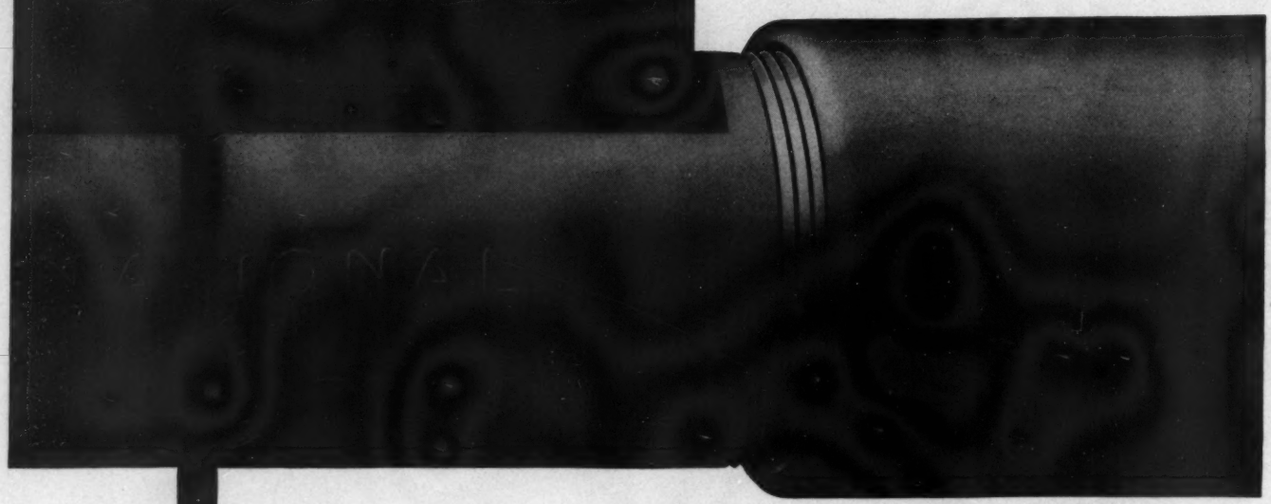


1. Conventional four burners, with work top at left.

2. Six burner, with working space at front center.

3. Eight burner, with burners evenly spaced over entire cooking top.

The WISE CHOICE!



- - - for service lines

What kind of performance will it give when installed and how long will it last, are the two main points Gas Companies naturally consider when selecting pipe for service lines. To give the ultimate in service, pipe must be clean and smooth, inside and outside; that is, it must be free from mill-scale. Such scale clogs orifices, causes corrosion and generally contributes to deterioration in the line. Therefore, Gas Companies will be wise in choosing NATIONAL Scale Free Pipe. It is made by a special Scale Free Process, applied to butt-weld sizes ½ to 3-inch. Here are the outstanding advantages of this clean, smooth pipe—

Minimized corrosion, particularly pitting—Clean, smooth surfaces, inside and outside—Full delivery capacity, less friction loss—No damage to valve seats; no clogging of small orifices—Greater strength at the weld.

When you order standard pipe for service lines, specify NATIONAL Scale Free and be sure of the maximum in performance and economy. Large use by discriminating buyers, continued through many years, has made it—*America's Standard Wrought Pipe.*

CHROMATE TREATMENT—*All National Galvanized Pipe is given a special chromate treatment to resist discoloration and the formation of white rust. This patented process preserves that smooth, glistening surface or metallic lustre which is characteristic of good galvanizing.*

NATIONAL TUBE COMPANY · Pittsburgh, Pa.

Pacific Coast Distributors—COLUMBIA STEEL CO., San Francisco, Calif.

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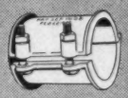
United States Steel Corporation Subsidiary

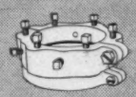
NATIONAL SCALE FREE PIPE
SPELLERIZED

SKINNER

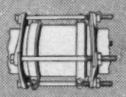


EMERGENCY PIPE CLAMP

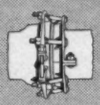
PIPE LINE CLAMP



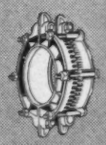
PIPE JOINT CLAMP



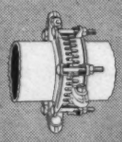
COLLAR LEAK CLAMP



BELL JOINT CLAMP

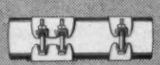


SPLIT COUPLING CLAMP



HIGH PRESSURE WELD CLAMP

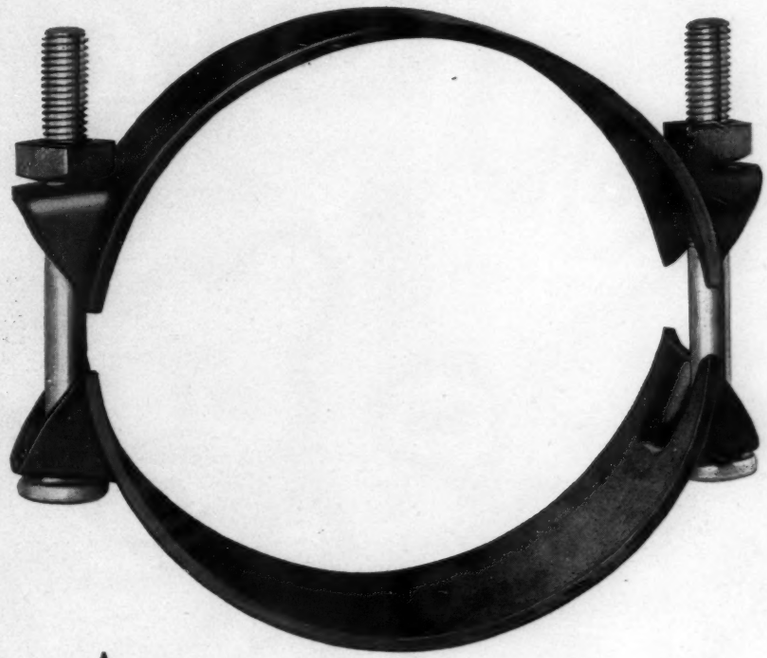
SERVICE SADDLE



PRESSED STEEL ECONOMY CLAMP

A CLAMP FOR EVERY LEAK

TREMENDOUSLY STRONG



A FACTORY PRECISION CLAMP AT LESS THAN HOMEMADE COST — *For stopping corrosion leaks, pit holes, etc.*

★ *NOT* a make-shift repair. *NOT* a thin spring-steel band with attached lugs—but a 3/16th″ thick, heavy, hot-pressed steel plate with inseparable wedge shaped lugs, *pressed out of the material itself!* Quickly, easily applied.

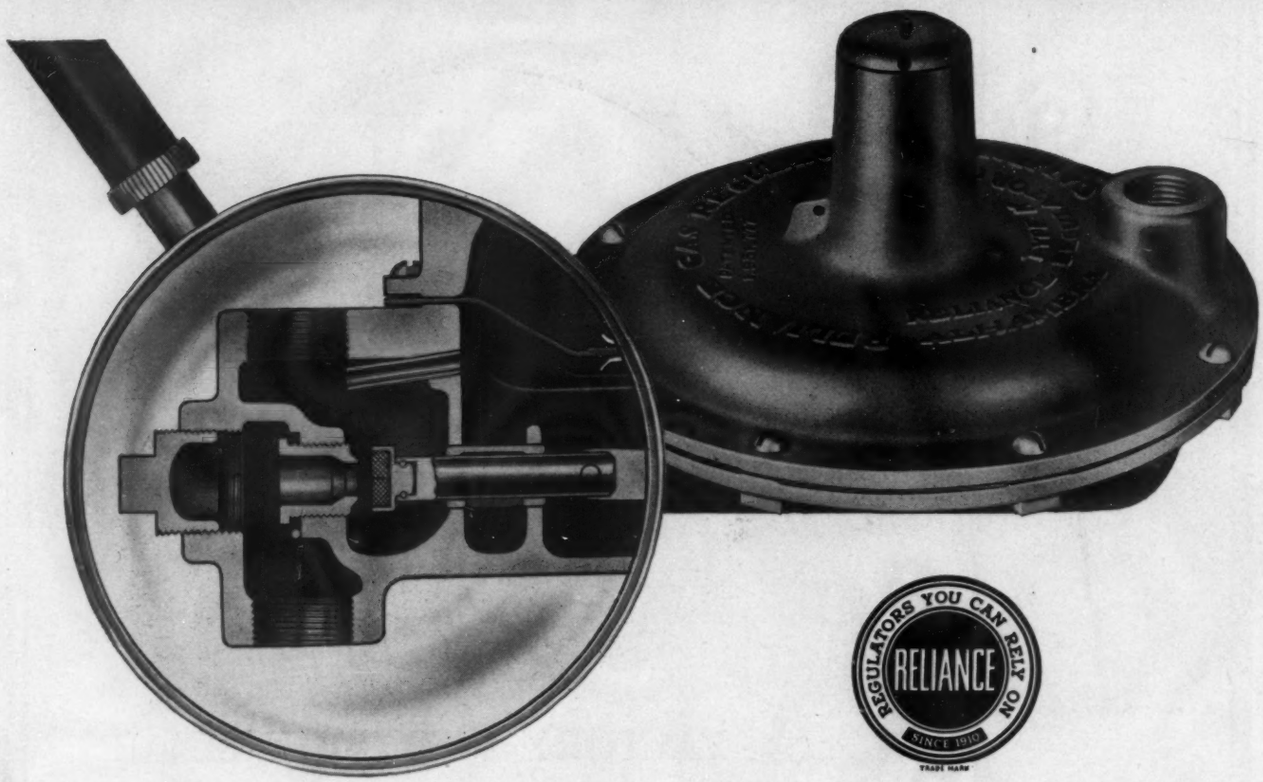
Narrow type 3½″ wide complete with cone plug gasket. Wide type 6½″ wide complete with new crescent-shaped strip gasket. Flexible, yet heavy enough to outlast the pipe itself. Pipe sizes 6″ to 24″ in stock. WRITE FOR QUALITY DISCOUNTS AND COMPLETE CATALOG NO. 35.

M. B. SKINNER COMPANY

Manufacturers and Engineers • Est. 1898

SOUTH BEND • • INDIANA

RELIANCE REGULATORS



Positive Control of Gas Pressure

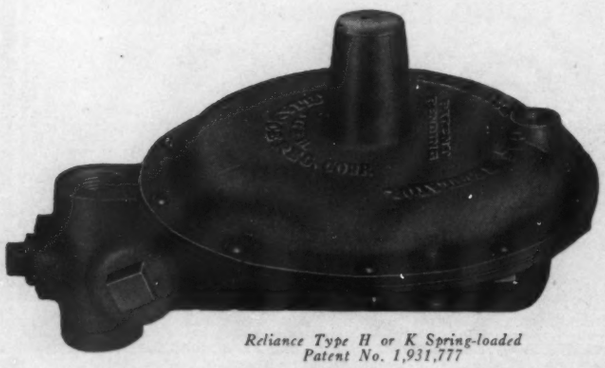
Types H and K Reliance Regulators (furnished in either spring-loaded or weight-loaded type to your specifications) will function accurately, efficiently and continuously over long periods of time with minimum of maintenance expense.

Four important service qualities are afforded by application of Reliance Regulators . . . (1) sensitive pressure regulation . . . (2) positive lock-up when consumption ceases . . . (3) minimum pressure loss in the regulator . . . (4) rugged construction.

Bulletins No. 27 and No. 31 explain in detail the design, construction and capacities of Types H and K Reliance Regulators. Write for your copies.

The Reliance organization also manufactures a complete line of district and domestic regulators. Copies of Illustrated Bulletins describing these regulators in detail are also available upon request.

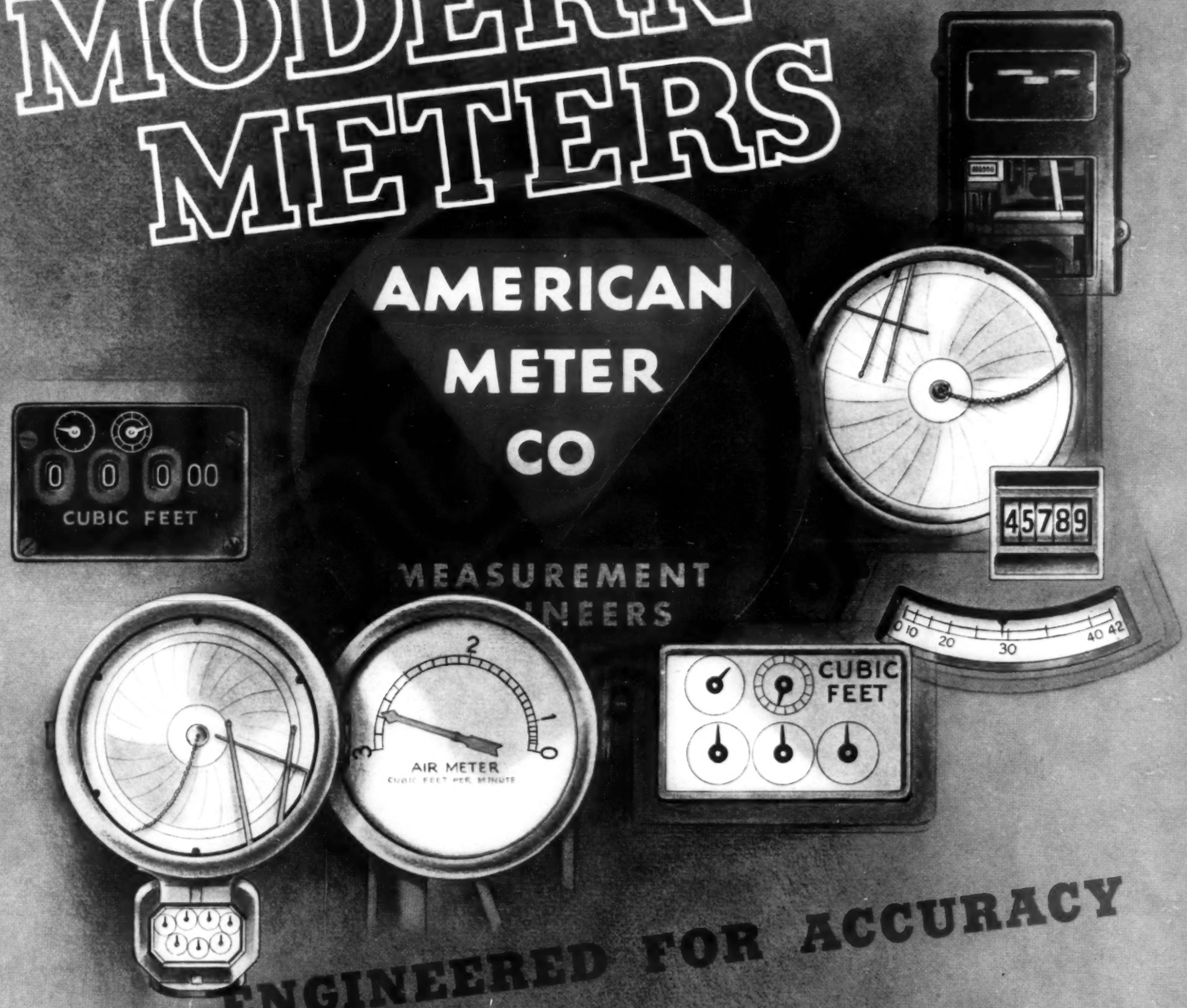
RELIANCE REGULATOR CORP.
1000 Meridian Ave. • Alhambra, Calif.
Regulators for Manufactured, Natural and Butane Air Gases



Reliance Type H or K Spring-loaded
Patent No. 1,931,777

Reliance Type H or K Dead-weight

MODERN METERS



ENGINEERED FOR ACCURACY

AND MAXIMUM RETURN ON YOUR INVESTMENT

THE COST OF ACCURATE MEASUREMENT IS MADE UP OF THE INITIAL COST TODAY PLUS MAINTENANCE COST TOMORROW AND FOR YEARS TO COME . . .

OF VITAL CONCERN to every gas company executive in the country interested in metering costs is the research work carried on during the past four years by American Meter Company.

On tin meters alone, outstanding results have been achieved on the following research undertakings, which are just a few of the many successfully projected:

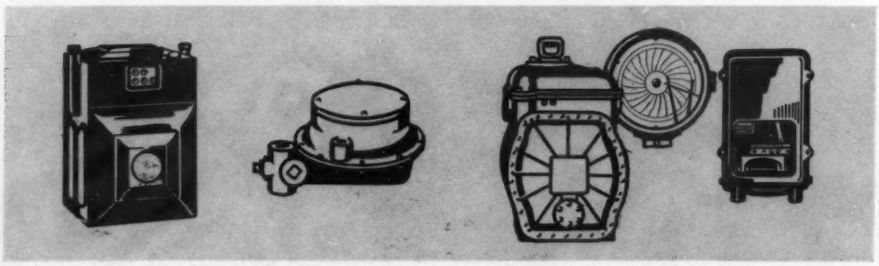
Accuracy at low rates of flow . . . Effect of lost motion and stuffing box friction on proof . . . Bearing corrosion . . . Strength of parts . . . Survey and exhaustive tests of all raw materials, including stuffing box greases, leather treatments, leather substitutes, etc.

●

ON IRONCASE METERS, research has achieved the following noteworthy developments:

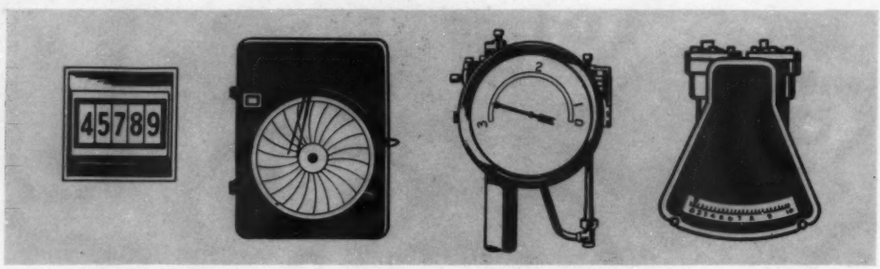
Improvements to h.p. meters including lubrication of all moving parts and protection from dust; Base Pressure and Base Volume Indexes; 500 lb. positive meter, differential valve, etc.

More complete information will be published for the industry shortly.



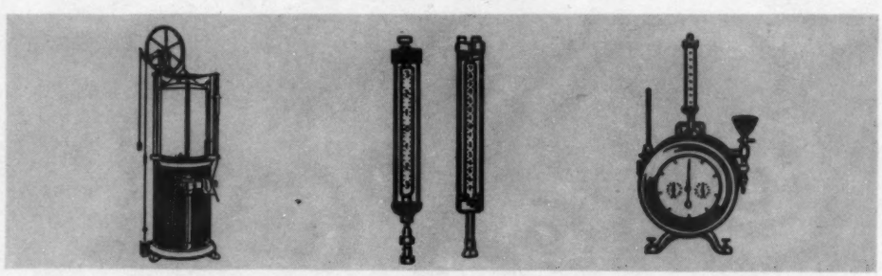
TINNED STEELCASE METERS • REGULATORS • IRONCASE METERS
VOLUME & PRESSURE GAGES • BASE PRESSURE & VOLUME INDEXES

TINNED STEELCASE METERS: Advanced developments in design and construction insuring accuracy on all ranges, including low rates of flow. IRONCASE METERS: The only meter offering one-piece body casting eliminating internal leaks, with a lubrication and dust protecting system in the larger sizes. BASE PRESSURE AND BASE VOLUME INDEXES: Save computing of charts; billing data always ready—always up to date. VOLUME & PRESSURE GAGES: They put your finger on costly load conditions and help you allocate charges correctly. RELIANCE REGULATORS: Appliance, service and industrial types; noted for their patented exclusive features providing positive lockup, accurate pressure control and greatly reduced upkeep cost.



INDICATING, RECORDING AND INTEGRATING ORIFICE AND FLOW METERS
RATE-VOLUME, LIQUID LEVEL AND PROPORTIONAL CONTROLLERS

Developed and manufactured to standards of accuracy established in the measurement of volumes as minute as the gas pilot light's flow. Notable for their extreme simplicity of construction. Fewer working parts. Fewer adjustments required . . . Upkeep costs greatly reduced.



TESTING AND PROVING APPARATUS • GAGES • WET & DRY TEST METERS

American Meter Company proving room and research instruments and equipment are the industry's laboratory standard of accuracy and reliability. Cubic foot bottles, calorimeter, pressure gages, wet and dry test meters, gravitometer and other specific gravity instruments.

Albany Baltimore Birmingham Boston Chicago Dallas Denver Erie Houston
Kansas City Los Angeles Philadelphia New York San Francisco Tulsa
CANADIAN METER COMPANY, LTD., HAMILTON, ONTARIO

AMERICAN METER COMPANY

INCORPORATED

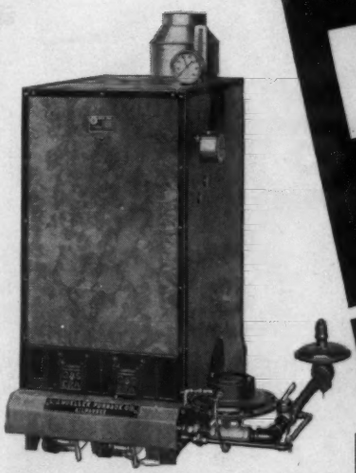
Measurement and control of Gas, Oil, Steam, Air and Liquids

ESTABLISHED 1836

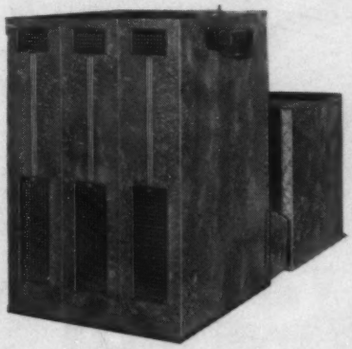
GENERAL OFFICES: 60 EAST 42nd STREET, NEW YORK, N. Y.

NOTE:
We shall soon announce a new series of Gas Era Boilers, amplifying our line to include smallest residences. A wholly new type and design.

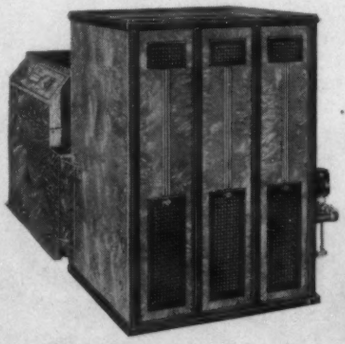
The Big Name in HEATING and AIR CONDITIONING is MUELLER-MILWAUKEE



Gas Era Steam or Hot Water Boiler
All interior surfaces vertical and smooth. Easy cleaning — low standby losses. Steam boilers have A.G.A. rating from 420 to 12,600 sq. ft. Hot water boilers 670 to 20,100 sq. ft.



Gas Era Steel Furnace
Multiple units with interchangeable sections and casing sections. Sections have A.G.A. input rating of 45,000 B.T.U. per hour. Shown with Climator IV Fan-Filter Unit attached.



Gas Era Cast Iron Furnace
Cast iron heating sections. A.G.A. input rating, 65,000 B.T.U. per hour. Cut shows 3 section furnace hooked up to our Climator III Air Conditioning Unit.

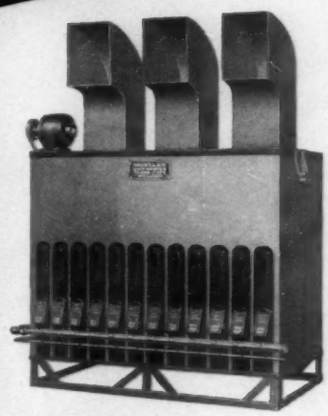
Here is the most complete line in the industry — gas-fired furnaces, boilers, combination units for all types of residence from cottage to mansion, and any size building—with a wide range of Air Conditioning Equipment for complete or partial service, with or without refrigeration.

A great merchandising asset is our multiple unit furnace construction. With a limited stock you can make up any size installation called for—a great economy in stocking and assembly.

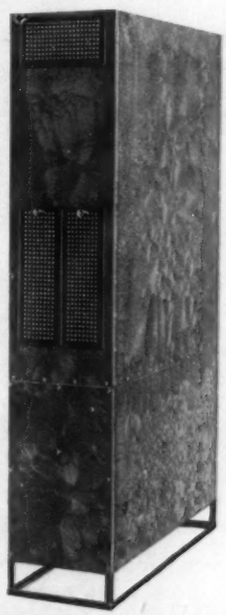
Let us send you our complete catalog. A postcard request will bring it.

L. J. MUELLER FURNACE COMPANY
Dept. WG-10, Milwaukee, Wis.
Branches and Distributors in Key Cities Everywhere

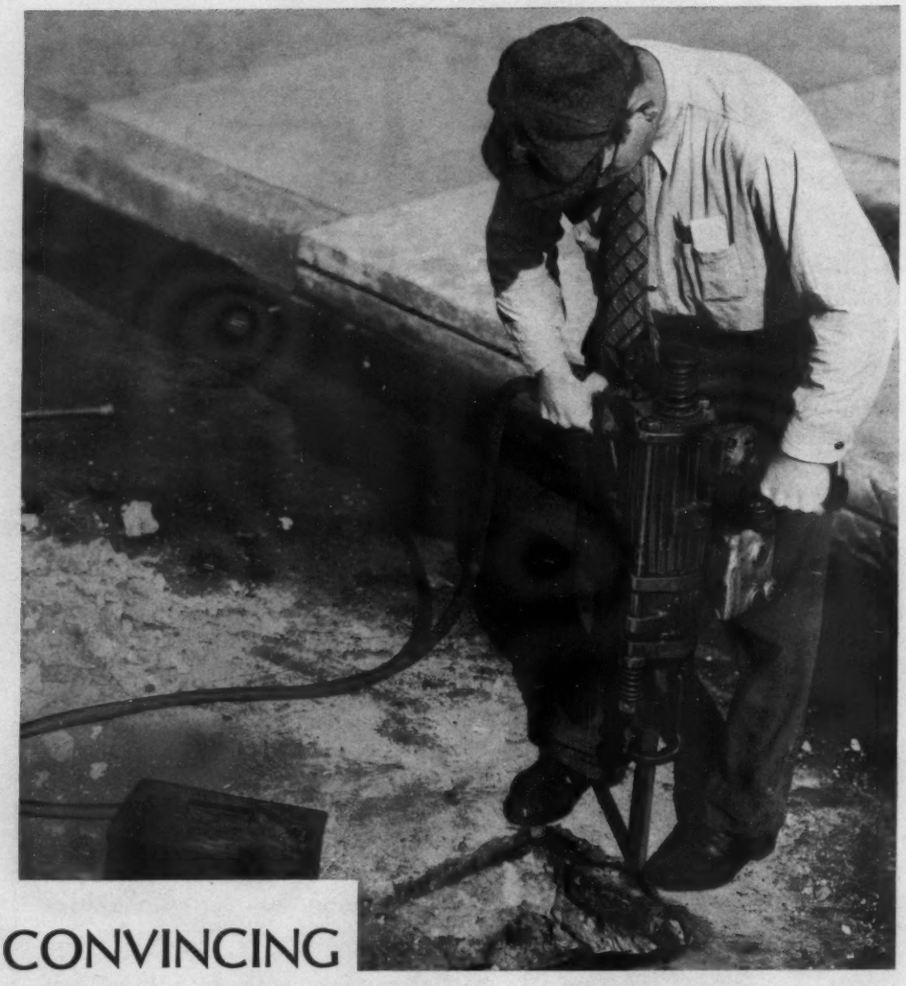
MUELLER MILWAUKEE



Mueller Unit Heater Gas Fired
—for space heating in factories and other open buildings. Unit construction, so any desired heat volume can be secured.



Cabinet Type Unit Heater
Complete heating and forced circulation unit for floor installation in residence or commercial building. Automatic. Four sizes.



Nothing SO CONVINCING AS PROOF LIKE THIS !

The Barco Portable Gasoline Hammer has proved on job after job the claims we make—that it will handle the toughest hammer work — it is fast — it will save money on every job. Here are some Barco performance records—

On a recent job, a Barco Portable Gasoline Hammer broke an opening 5′ x 4′ through reinforced concrete 9″ thick in one hour and twenty minutes. Another Barco, on one job of drilling 200 holes, ranging to seven feet in depth, more than paid for itself. Other performance records are—driving 1¼″ x 14′ ground rods in 8 minutes per rod; breaking 6″ thick concrete section 3′ x 4′ in 20 minutes; drilling in granite 1½″ holes 18″ deep in 30 minutes per hole.

As the Barco Hammer operates at a cost not exceeding 20c per working hour, its economy over heavier equipment is obvious.

Ask us to send you details and prices.

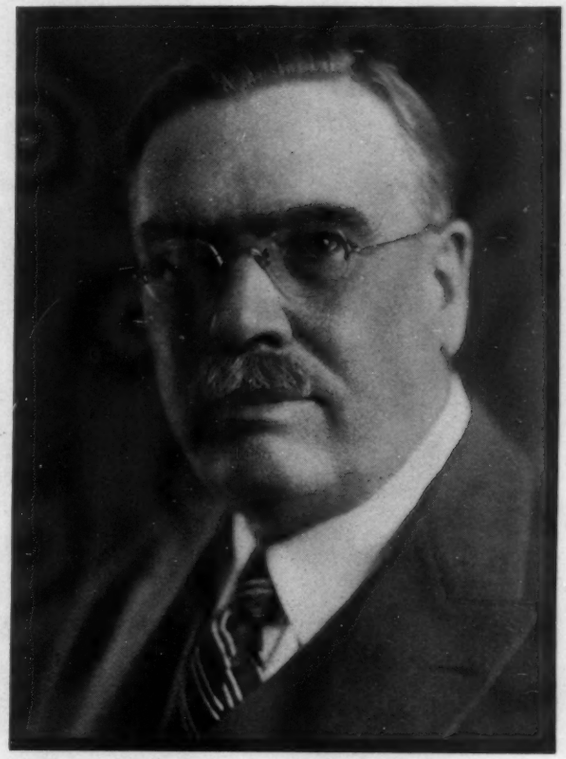
Model H-5 for heavy duty; J-1 for light work.

BARCO MANUFACTURING CO.
1801 W. WINNEMAC AVE., CHICAGO, ILL.

BARCO
PORTABLE GASoline HAMMER

WESTERN GAS
October, 1935

Guest Editorial



By B. J. MULLANEY

Vice-President—Public and Industrial Relations
The Peoples Gas Light and Coke Company, Chicago, Illinois

"Required Reading"

THE July number of *Fortune* had a report on its survey of what people generally think about taxes in comparison with what they think about their bills for public utility service.

How many of us public utility folks have given that report more than a passing glance, if any? A young helper of mine thinks it ought to be "required reading," as the college courses specify, for all utility executives. With an alert mind not yet dulled by impact against corporate routines and inertia, he finds significance in the comprehensive character of the survey, in its evident thoroughness and in the time when it was made, as well as in its surprising (to some of us) results.

To put the net result of the survey into fewest words, it showed that people of all classes, in all sections of the country, are much more concerned about taxes and their share of the tax burden than they are about their bills for public utility service.

And mark this. The survey was evidently made early in 1935, at a season when most utility service monthly bills are highest; at a time when governmental spending (for public benefit) was in the foreground, when a promise of no-tax-boosting-legislation by congress this year had been recently broadcast, and long before the tax legislation finally enacted was heard of; at a time when the utility business generally was under fire (on accunt of the holding company bill) in newspapers, on the radio, and in the newsreels, with consequent freshening of hostility to the business wherever it might exist.

Yet—more people, *Fortune* found, thought taxes were too high than thought utility service rates were too high.

Isn't it a reasonable inference from the showing of this survey that we public utility folks are a bit jittery when we weep on one another's shoulders because "the public is so unfair" to us? And isn't it just possible that utility baiting may be only an unrecognized hangover from the days when trust-busting and all around harping on "the corporations" were fresh bait?

We know that utility rates generally, the country over, are fair and the services good. The *Fortune* survey would seem to indicate that users of the services predominantly think so, too. If the rates and services were not respectively fair and good, the utility industry in all of its branches could not have grown as it has in the United States. Successful development of *any* kind of business on unfair prices and poor product (service) is just impossible.

But self-confidence (or its degenerate twin, self-satisfaction) shouldn't be allowed to slow up our efforts to make a good situation better. Trying to improve it is one way of keeping it good.

We cannot hope ever to have our customers so fond of us that they will spontaneously rush to our defense when we are criticized or attacked, which some utility men seem to think should be the effect of public relations effort. Human beings don't do that for anybody that they have to pay money to.

But we *can* keep our customers predominantly unhostile—which is the best we have a right to expect—if we keep the rates fair and the service good. And doing this, as to service, means more than merely efficient execution of the physical details of service. It means rendering service courteously and pleasantly and satisfactorily *from the customer's point of view*, which may not be quite the same as ours. If we do this consistently—put more brain-sweat into it than we do into bemoaning "unfair criticism," we won't have much to worry us. No business was ever destroyed, as no person was ever convicted of crime, on suspicion alone.

H. M. CRAWFORD, elected president of the Pacific Coast Gas Association at the Pasadena convention last month, is general sales manager for the Pacific Gas and Electric Co., San Francisco. He may be counted on to give a load-building slant to P. C. G. A. activities through 1936.

October, 1935

WESTERN GAS

"Reg. U. S. Pat. Off."

Vol. XI, No. 10

LOS ANGELES—810 South Spring Street . . . . . 1064 Peoples Gas Building—CHICAGO

A Voice for All Investors

LAST month the American Federation of Utility Investors announced a change of name. Now known as the American Federation of Investors, the organization will extend to holders of securities of all industries the same vigilant and courageous leadership which it has rendered utility investors. The Federation was in the front of the fight against drastic features of the utility bill. Extending its battle lines should help to unify investors of all classes, large and small, and give them an articulate voice against what the Federation terms "the blighting forces of state socialism under a political leadership that threatens to destroy our American system of government."

Laboratories' 10th Birthday

A LARGE place on the program of the American Gas Association's Chicago convention is given over to the A. G. A. Testing Laboratories, as this institution observes its 10th anniversary. The gas industry's success with this testing and research program, which has contributed so much not only in improvement of utilization equipment but in popularizing modern gas service, is without a parallel. The Laboratories now serve approximately 250 manufacturers, and 90 per cent of all gas appliances sold in the United States and Canada are approved as a result of tests upon more than 8,000 basic models.

To A.G.A. headquarters staff, Laboratories' committees, Director R. M. Conner and his assistants go the industry's congratulations on this 10th birthday.

Sniping vs. Heavy Artillery

ONE of the Pacific Coast Gas Association's recent advertisements in behalf of modern gas cookery brings quivers of indignation to the editorial pen of *Electrical West,* in a September issue philippic entitled "Sniping Electric Cookery."

The censored gas ad presents a home economics editor, advising a friend to purchase a gas range for reasons of superior speed and economy. The copy is generalized, as good copy intended for the housewife's eye often must be. It quite as easily could have been put up as a scientific treatise covering actual tests conducted right on the Pacific Coast by home economists of unquestioned standing, giving the time-saving of the gas range over the electric in split seconds, and the economy in fractions of a cent. But Mrs. Consumer doesn't like that kind of ad copy, and the astute ad men in charge of the P.C.G.A. campaign know it.

At any rate, *Electrical West* sees only "half-truths and inuendo" in the P.C.G.A. copy, which it brands as "a sniping campaign against electric cookery that is neither ethical nor in the interests of inter-industry harmony."

Now goodness knows, there is real need of harmony between electric and gas fraternities on several basic issues, but we strongly suspect this matter of cooking load is not one of them. Within decent limits each industry may be expected to plug its own cooking story without ceasing. We do agree with *Electrical West* that advertising should stay well within the bounds of truth. In fact, we go a step further and hold that some subjects should be left strictly alone in gas and electric advertising. Hazard in use of utility service is one of them. There are vulnerable points in each industry which can be made much of, from a popular ad-writing standpoint, though modern gas and electric appliances have reduced *actual* hazard to the vanishing point. Just by way of illustration, here are catch-lines from three electric advertisements appearing in recent issues of California newspapers:

"No flames—gives you complete peace of mind."

"No danger means no fear. Approved electric water heaters are *safe.*"

"No flames—nothing to blow out or go out."

This sort of copy makes the P.C.G.A. "sniping" look a bit innocuous to us. In fact, if this is sniping, the electrical ad men have been using heavy artillery for lo, these many years.

NEXT MONTH WITH "WESTERN GAS"

Guest Editorial

The series of executive statements on matters of headline interest to utility readers, inaugurated in this month's issue, will continue.

Fundamentals in House Heating

Beginning an integrated discussion of physical aspects of house heating which will extend over the next six issues. Subject matter covered in this detailed treatment of fundamentals will include: Gas burner equipment — the heating survey — control system — heating plant — heat distribution system — gas and electric supply — the building — customer usage.

Government in Business and the New Deal

Historical background of government-in-business and public-ownership activities is covered in E. F. McKay's current article. His concluding discussion next month will show the relation of these forerunner developments to current records of the New Dealers. Utility readers should know this story, which concludes in November *Western Gas.*

Transmission Line Corrosion Problems

Methods used to mitigate corrosion on a Rocky Mountain system, where physical conditions of line route and climate are unusually severe, are described in this feature.

CONVENTION PANORAMA FOR PACIFIC COAST GAS ASSOCIATION'S 42ND ANNUAL

42nd Milestone Passed by

By GEORGE H. FINLEY

PACIFIC Coast Gas Association's 42nd Annual Convention, at Pasadena, Calif., had everything—from sound movies and Mexican musicians to the more sedate but essential business program—to make it long remembered in west coast convention annals. The last delegate to register was number 417, and the 590 present at the annual banquet crowded Hotel Huntington's main dining room facilities to the limit.

Opening on September 17 the convention ran three days with headquarters at Pasadena and wound up informally on the grounds of the California Pacific International Exposition at San Diego, where Gas Appliances Day was celebrated on September 21. The spectacular gas cooking school held at the Exposition is covered at a later point in this review.

Distinguished visitors at the convention included L. B. Denning, president of Lone Star Gas Co. and vice-president of the American Gas Association; and John Keillor, this year's president of the Canadian Gas Association. Mr. Keillor brought a cordial invitation to P.C.G.A. members to attend the joint meeting with the Canadian group at Vancouver next July.

President Wm. Moeller, Jr. declared the sessions open at 10:30 Tuesday morning. Most conventions provide a message of welcome, but few welcome addresses equal that of Miss Marion Parks, secretary of the Historical Society of California, who's "Bienvenida" took the delegates back into California's glamorous early days. Assisted by three Mexican troubadours, Miss Parks in word and song gave a genuine California welcome to the delegates and created a friendly atmosphere which carried through the whole proceedings.

Before dealing with individual messages brought to the convention, a word is in order on elections and other official actions taken by the Association at Pasadena.

Here is the official line-up for the 1935-1936 administration:

President: H. M. Crawford, general sales manager, Pacific Gas and Electric Co.
Vice-President: Jas. F. Pollard, vice-president and general manager, Seattle Gas Co.
Treasurer: D. G. Martin, auditor, Pacific Gas and Electric Co.
Managing Director: Clifford Johnstone.
Directors: Edward H. Coe, Phoenix, Ariz.; E. L. Hall, Portland, Ore.; A. E. Hollaway, San Diego, Calif.; H. L. Masser, Los Angeles, Calif.

By amendment to the Association By-Laws several changes were made in Section organization. The new "Sales and Advertising Section" was created in place of the former Commercial Section and Publicity and Advertising Section. The name of the Accounting Section was also changed to "General and Customers' Accounting Section." Under the new set-up the former Public Relations Section is abolished.

President Crawford has made the following appointments of general section chairmen to head the active committee work of the Association for the ensuing year:

Customers and General Accounting Section: Lester E. Green, Los Angeles Gas and Electric Corp.
Sales and Advertising Section: W. M. Jacobs, Southern California Gas Co.
Technical Section: P. E. Beckman, Pacific Gas and Electric Co.

▲

President Wm. Moeller, Jr. (left) examines the convention program with L. B. Denning, vice-president of the A. G. A. and president of the Lone Star Gas Co., while some of the fair Convention Committee assistants look on.

▼

MEETING, TAKEN IN THE PATIO OF HOTEL HUNTINGTON, PASADENA, CALIFORNIA

P.C.G.A. at Pasadena Session

Editor
Western Gas

Several other important appointments made by President Crawford include that of Eugene G. McCann, Pacific Gas and Electric Co., as chairman of the new Educational Committee, which takes on a large share of the Public Relations Section's work; Alma Freeburg, Coast Counties Gas and Electric Co., as chairman of the Womens' Committee, which formerly operated under the Public Relations Section but will now act as an independent committee; and A. C. Joy, Pacific Gas and Electric Co., as chairman of the Association's Cooperative Advertising Committee, this being Mr. Joy's second successive year in that office. In connection with this important committee's activities a very complete exhibit of Pacific Coast Gas Association cooperative advertising was arranged in the main lobby of the Huntington during convention dates, covering all phases of the campaign. This Association promotion for the gas industry in its territory has proceeded uninterruptedly from 1929 through 1935 and represents the most sustained advertising endeavor of the kind that has ever been conducted.

Although it is somewhat early for completion of the Sections' working organizations, several appointments have been made by the general chairmen.

Mr. Jacobs for the Sales and Advertising Section announces his three chief committee heads as the following:

Industrial Sales Committee: Robert L. Grutzmacher, Natural Gas Equipment, Inc., San Francisco, chairman.

Domestic Sales Committee: E. J. Strickland, Southern California Gas Co., San Bernardino, chairman.

Advertising Committee (a new activity): Forrest M. Raymond, San Diego Consolidated Gas and Electric Co., chairman.

Mr. Beckman for the Technical Section has named the following major assistants:

Transmission Committee: Arthur B. Allyne, Southern Counties Gas Co., Los Angeles, chairman.

Distribution Committee, Otto Goldkamp, San Diego Consolidated Gas and Electric Co., chairman.

Utilization Committee: Guy Corfield, Los Angeles Gas and Electric Corp., chairman.

Heads of the several Divisions included within the Manufacturers' Section, as well as the Section officers, are put into office by election rather than appointment. The complete set-up for the Section is as follows:

General Chairman: W. J. Bailey, Day & Night Water Heater Co., Monrovia, Calif.

Vice-Chairman: Clarence Graham, Jas. Graham Mfg. Co., Newark, Calif.

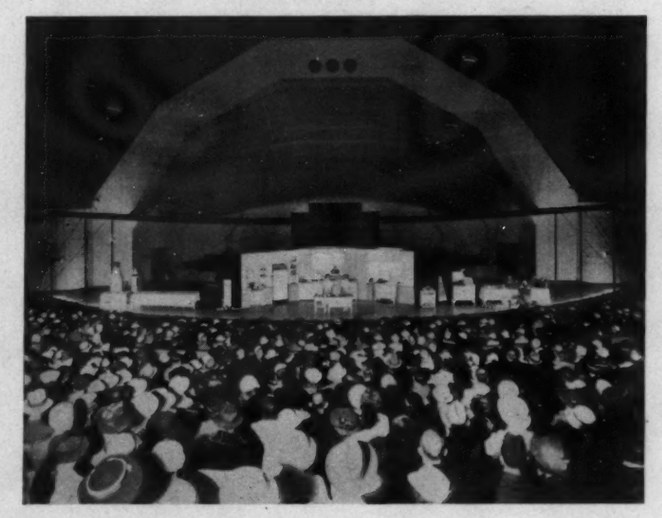
Furnace Division: Chairman, R. G. Logue, Ward Heater Co., Ltd., Los Angeles; vice-chairman, W. W. Norton, Electrogas Furnace and Mfg. Co., San Francisco.

Range Division: Chairman, W. G. Gaffers, Gaffers and Sattler Co., Los Angeles; vice-chairman, George Hammer, Hammer-Bray Co., Oakland.

Water Heater Division: Chairman, R. C. Hoyt, Hoyt Heater Co. of Northern California, Oakland; vice-chairman, W. R. Smith, Continental Water Heater Co., Ltd., Los Angeles.

Space Heater Division: Chairman, A. J. Hartfield, Pacific Gas Radiator Co., Huntington Park, Calif.; vice-chairman, J. S. Andrews, Andrews Heater Co., Los Angeles.

General sessions of the Convention were ably arranged to throw into relief some of the main issues now facing the industry. President Moeller in his ad-



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This "Modern School of Gas Cookery" played to an audience of 3,000 at Ford Bowl, on the grounds of the California International Exposition at San Diego, on Gas Appliances Day — September 21.

▼

dress to the opening meeting pointed to the increasingly stringent competition which the industry is facing from other fuels and from political activities. He made a strong plea for more unity in the industry, with specific recommendation for cooperative promotional efforts by Pacific Coast gas companies as a course of action best calculated to meet the condition.

Later in the program Jas. F. Pollard, dealing with the subject of competition in the Pacific Northwest, referred again to the recommendations in Mr. Moeller's address. Using as an example of what electric competition can do, the situation in Seattle—where the cooking load is now split almost equally between electricity, gas and solid fuels—Mr. Pollard offered that it is time to "debunk electric propaganda." He urged as did President Moeller, that the industry take united action to get across to the public that gas is modern.

Summing up the situation the following resolution was adopted at the closing general session:

"That the principal problem confronting the gas industry lies in the competitive activities of the producers of other fuels combined with the destructive activities of certain government agencies and politicians through their so-called measuring sticks in various parts of the country has been definitely pointed out by President Moeller in the opening address before this Convention.

"The Association, therefore, recommends that immediate, effective and vigorous steps be taken to build up through every possible cooperative effort of its members of all classes, public acceptance for gas as the best and most modern, as well as the most economical fuel for all domestic and many industrial purposes, not only with a load-building objective but also to counteract political attacks and destructive propaganda, and that this Association take the necessary steps to bring this matter before the American Gas Association and to urge it to work out and initiate such a campaign on an equally vigorous and nationwide scale."

During the convention a meeting of higher executives of several west coast companies was held, to discuss possibility of instigating a general promotional program for the industry, and it was determined to make representations to the American Gas Association executive board, looking to a national advertising campaign.

Outstanding on the general sessions was the address of L. B. Denning, who was introduced to the convention by A. B. Macbeth, president of the Southern California Gas Co. Mr. Denning brought greetings from the American Gas Association and a stirring message on "Gaining the Confidence of the Public." The gist of his remarks was that utilities should "be human"—should build human organizations. He stated that the first step in confidence-building is that a company or an industry have confidence in itself; also, that confidence proceeds from the top down, which places a definite responsibility upon management in every utility institution. As a watch-word for the industry, amid its current political difficulties, Mr. Denning proposed the phrase "unite and challenge"—challenge those in temporary political authority who would confiscate from private industry property which has been honestly acquired and honestly administered.

The American Gas Association was also represented before the convention in the address of Capt. A. E. Higgins, secretary of the Natural Gas Department, who gave a birds-eye view of business promotional programs throughout the nation. Eugene D. Milener, research engineer for the A.G.A. in his paper on "Markets for Gas—Old and New" dealt with the two phases of utilization research—lowering unit fuel consumption in present processes, and developing distinctly new processes for carrying on manufacturing operations. Contributions of A.G.A. research were discussed, and a special plea made that the industry give air-conditioning by gas its due in 1936 promotional plans.

H. M. Crawford (left), P. C. G. A. president-elect, has just congratulated Geo. S. Campbell on his work as general chairman of the Convention Committee.

Much enjoyed was the address of L. G. Hanmer to the closing general session on the subject of the social security legislation enacted by Congress last August. Mr. Hanmer, manager of the pension department for Johnson & Higgins of California, gave a clear picture of what this measure will mean in its full application, stating that 25 years hence it will require from 15 to 20 per cent of the entire national income to supply an average above $50 monthly to 15 million pensioners. Creation of a new political football in the tremendous pension allotments, development of cumbersome and expensive administrative machinery, and destruction of benefits under present pension plans in private industry were some of the effects seen by Mr. Hanmer in the social security legislation.

Western Gas for September reproduced a number of the papers from Technical, Commercial, and Accounting Sections, and others are reviewed elsewhere in this issue.

An activity of importance in the Technical Section during the past year has been that of a committee on Orifice Meter Standards, headed by F. A. Hough, Southern Counties Gas Co. Working with representatives of the Southern California Meter Association and the California Natural Gasoline Association, the Association's representatives have worked up an extensive report incorporating the new orifice meter coefficients developed in the American Gas Association and United States Bureau of Standards investigation, and representing a standard procedure for orifice meter measurement of gas under Pacific Coast conditions. By resolution the Convention endorsed the report of the joint committee and recommended that member companies adopt the coefficients and standard procedure set up therein.

One of the best attended meetings sponsored by the Technical Section was the Utilization Conference held Tuesday evening, under the chairmanship of H. W. Geyer, Southern Counties Gas Co., chairman of the Utilization Committee. Several of the papers at that meeting will be published in future issues of *Western Gas*.

Under the chairmanship of R. R. Blackburn the Public Relations Section made a worthy contribution to the convention, sponsoring two of the general sessions. At the Wednesday morning meeting two main subjects were considered, "Education and Training of Utility Employees" and "Personalizing Customer Contacts." Guy Wadsworth, personnel manager for Southern Counties Gas Co., introduced the education and training theme with a basic paper on educational approach and technique. His paper will appear in an early issue. H. T. Bryan of Southern California Gas Co. discussed the planned lesson method of instruction, and Lee Holtz of the same company outlined specific job training methods. E. W. Ellis, assistant secretary of Southern California Gas Co., divided his discussion of customer contacts into four sections—applications for service, credit ratings and deposits, customers' bills, and customers' complaints. Discussion on this paper was led by A. B. Carpenter of San Joaquin Light & Power Corp.

An evening program in charge of the Public Relations Section was given over to talking motion pictures made by Pacific Coast gas companies to assist in employee and customer education.

(Continued on Page 40)

CHICAGO'S IMPRESSIVE SKYLINE

CONVENTION STAGE SET AT CHICAGO

3,000 Expected for 17th Annual A. G. A. Sessions

AS OCTOBER 14-17 annual convention dates draw near the American Gas Association is setting the stage for its Chicago sessions, the first held off the east coast since 1927, when Chicago last was host to the meeting. Headquarters will be at The Palmer House, and attendance is expected to run to 3,000. There will be no manufacturers' exhibit at this 17th annual convention.

As the following tentative program of general session topics indicates, the current political scene will get little attention in this year's convention deliberations, the spotlight being shifted to the abiding problems of load-building, and improvement in utilization and operating facilities. Celebration of the American Gas Association Laboratories' 10th anniversary is accorded a large place on the program.

These are the features now set forth on the tentative program for general sessions:

FIRST GENERAL SESSION
October 15

Call to Order: president P. S. Young, Newark, N. J.

Welcome to Chicago: Mayor Kelly.

The Association's Finances: Joseph F. Rooney, treasurer, assistant to vice-president, Consolidated Gas Co. of New York, New York, N. Y.

Association Activities: Alexander Forward, managing director American Gas Association.

Report of General Nominating Committee: D. D. Barnum, president, Boston Consolidated Gas Co., Boston, Mass.

Election of Officers.

Effective Administration of Resuscitation—Twelve Years' Experience: Cecil K. Drinker, M.D., Harvard University School of Public Health.

Caring for Peak Loads: L. J. Willien, Byllesby Engineering & Management Corp.

Presidential Address: P. S. Young, vice-president, Public Service Electric & Gas Co., Newark, N. J.

SECOND GENERAL SESSION
October 16

Changing Rate Structures: H. H. Agee, chairman, Rate Structure Committee, Newark, N. J.

Increasing Sales Per Domestic Consumer: George N. Wallace, Minneapolis Gas Light Co., Minneapolis, Minn.

Extending Commercial Business: J. F. Quinn, chairman, Industrial Gas Section, Brooklyn, N. Y.

Employees' Part in Selling Gas and Appliances: C. A. Harrison, chairman, Technical Section, New York, N. Y.

Presentation of Charles A. Munroe Award: Charles A. Munroe, president, Northern Utilities Co., New York, N. Y.

Presentation of Beal Medal: P. S. Young, president, American Gas Association, Newark, N. J.

Presentation of Prosperity Cups: F. M. Rosenkrans, chairman, Commercial Section, Kansas City, Mo.

The Chamber of Commerce and American Business: Harper Sibley, president, Chamber of Commerce of the United States.

THIRD GENERAL SESSION
October 17

Tenth Anniversary Celebration of the American Gas Association Laboratory.

The Palmer House, Chicago—17th Annual Convention headquarters.

George E. Whitwell, member Laboratory Managing Committee

A. F. Bridge, member Laboratory Managing Committee

John A. Fry, president Detroit-Michigan Stove Co.

H. Leigh Whitelaw, vice-president, American Gas Products Corp.

Showing of Film—Service

The Radio Program: Henry Obermeyer, chairman Publicity and Advertising Committee, New York, N. Y.

The Challenge to the Gas Industry: F. A. Newton, Commonwealth & Southern Corp., New York, N. Y.

Industrial and Commercial Selling: George F. Mitchell, president, The Peoples Gas Light & Coke Co., Chicago, Ill.

A. E. Higgins, secretary of the Association's Natural Gas Department, has released a tentative set-up for the Department's one-day program. This will take place on October 14, beginning at 9:30 a.m. with the annual meeting of the Main Technical and Research Committee, of which H. C. Cooper, Hope Natural Gas Co., Pittsburgh, is chairman.

At 1:30 p.m. will come the annual meeting of the Department, with chairman's address by John B. Tonkin of Peoples Natural Gas Co., Pittsburgh, and the report of the Main Technical and Research Committee. Election of officers will follow the report of the Nominating Committee given by Frank L. Chase, Lone Star Gas Co., Dallas, Texas, chairman.

Two key subjects are set for discussion at the above meeting—"General Problems of Taxation and Legislation," and "Building the Natural Gas Load". R. D. Garver of the Gas Service Co., Kansas City, Mo., will introduce the first topic, with G. J. Neuner of Panhandle Eastern Pipe Line Co., Kansas City, Mo., and George A. Lee, Northern Natural Gas Co., Chicago, also contributing. W. C. Beckjord, Columbia Gas and Electric

(Continued on Page 39)

GOVERNMENT IN BUSINESS

E. F. McKAY

EVERYONE KNOWS that government's invasion of private business operation has stepped into high gear since March 4, 1933. No governmental unit has a monopoly on the movement, and the utilities are usually the first to feel the force of local, state, or federal business ambition.

All of this is well known to the utility industry. Less familiar, however, is the background from which this patently socialistic program has drawn its motive force, and in tracing it to its sources in his present article Mr. McKay renders the industry a considerable service. The article is arranged in two installments, Part I being briefly historical, and Part II (to follow in November) filling in the specific details of government competition and anti-utility activities in general.

Every utility employee needs to know this story, both in its historical and current phases, for to appreciate the close relation between present government trends and the activities of avowed socialistic groups, is to be forearmed for the future.—EDITOR.

By E. F. McKAY

THE recent session of Congress with its unprecedented output of measures progressive or liberal, if not socialistic, in character, and its bitter controversies with reference to several of them, has brought conviction to most observers that the governmental policy involved in the enactment or consideration of these measures will have an important place in the presidential campaign in 1936.

Many a citizen who heretofore has been indifferent to warning against the encroachment of the government, local, state and federal, upon the field of established business now realizes that this warning has been no cry of "wolf" when there was no wolf, and is asking himself and anyone else to whom he can turn, "Who started all this anyway, and why?"

While no man can appraise accurately the importance of events of his own day in their relation to history or to any considerable epoch, many will agree that March 4, 1933 was a milestone in American history.

We are reminded that on that day the banks of this country were entering upon a "holiday," declared in order to avoid a worse situation. We are told that because the "holiday" came to an end and because business has improved, the New Deal, promised during the 1932 campaign and delivered since the 1933 inauguration, is vindicated.

To agree or disagree with this conclusion is not the purpose of this article, but rather to consider the origin and extent of some of the activities of the government in competition with private business, some phases and factors of the New Deal, their significance, and their relation if any to declarations of certain individuals and undertakings by certain groups, antedating by a good number of years the beginning of the present national administration.

As early as two decades ago there was a definite trend toward physical interconnection in the electrical industry, transportation of natural gas over long distances, and toward corporate consolidation and organization of financial interests to make this possible.

General Tripp's Prophecy

Brigadier General Guy E. Tripp, identified with the Ordnance Department at Washington during the World War, and in 1923 chairman of the Board of the Westinghouse Electric & Manufacturing Co., pointed out to the convention of the National Electric Light Association that a 1,000 horsepower generator, such as used for electric service in a small town, required about 4 pounds of coal to produce one horsepower for 1 hour, but that a 50,000 horsepower generator, such as used for large systems could produce 1 horsepower for 1 hour from less than 1½ pounds of coal. This economy of large units was offered in explanation of the constant reduction in the price of electricity, expansion and interconnection of electric systems, and change from local to system service then taking place so generally throughout the country. This development of electric service over wide areas, and the further interconnection of large systems with prospective ultimate nationwide interconnection was described by General Tripp in the convention address referred to, and discussed by many others.

General Tripp said:

> "With this plan to guide them electric light and power companies in remotest parts of the country can now work in harmony and can build in confidence toward a common end. . . . It gives to the electrical industry something that exists in no other great field of human endeavor—a definite program to guide the developments of generations to come."

The American policy of free exercise of individual initiative with appropriate reward for intelligent effort already has brought business in this country, as typified by the utility industry, to a stage of development unknown elsewhere in the world. General Tripp's prediction in 1923 rested upon the assumption that individual initiative and intelligent effort should have the same opportunities in the future as in the past. General Tripp died without knowing that this basis for his prediction was to be threatened.

In 1923, and even earlier, many men in the utility industry and some in other lines of business had become concerned over the demands of agitators that the government enter competition with private business. There had been a clamor for government operation of railroads, but experience during the World War had practically silenced this, and the agitators, sensing the vast possibilities in the utility field, adopted public utilities as their immediate objective, with numerous other fields of activity for later attention.

The Socialist Party, of course, had been all-inclusive in its program, but many proponents of government ownership realized that to sponsor the Socialists' program as such in name would retard progress toward their objective. So the program, without the name, was offered to candidates and to some men already in high official position, with organized support of groups of several

AND THE NEW DEAL:

Who Started It, and Why

Manager
Oklahoma Utilities Association
Oklahoma City, Oklahoma

names but with a common purpose. Universality of the direct primary and amendment of the federal constitution to provide for election of United States senators by direct vote were instrumentalities for which these liberal groups had battled as one, and which, when achieved, proved of all the value to them that had been anticipated.

Foremost among these groups, in addition to the Socialist Party, were the League for Industrial Democracy, the National Popular Government League, the People's Legislative Service and the Public Ownership League of America, with the latter "carrying the ball" for all in the general offensive against established business.

League for Industrial Democracy

The League for Industrial Democracy dates back to 1905 when it was organized as an offshoot of the Socialist Party, under the name, "Intercollegiate Socialist Society." The present name was adopted in 1921. Its principal activity has been spreading socialistic doctrine among students in colleges and universities. The New York Call, Socialist paper, on November 19, 1921, announced the League as having come into being on the framework of the Intercollegiate Socialist Society, and quoted Norman Thomas, referred to later in this article, as stating that the League was designed to stir up "tired radicals" of the "red, the near red and infra red" varieties and to offer immediate contacts to the "ardent and unfatigued" youths of the colleges. Thomas was quoted further:

"It came into being because members of the former society felt that their efforts should not be confined merely to collegians and also that their organization should stop merely studying Socialism and commit itself definitely to the principal of collective ownership."

That the organization considered itself effective is indicated by its official news bulletin for July, 1925, which quoted from the annual report of its secretary, Harry W. Laidler, as follows:

"Of the utmost importance in the work of the League during the past season has been its college activity. Paul Blanshard, our Field Secretary, was on the road in our behalf almost continuously from October, 1924 to May, 1925. During this time he crossed and recrossed the continent, speaking before some 40,000 students in 101 colleges and universities and before many thousands of townspeople. He addressed student assemblies, college classes and other student groups in no less than 25 states. . . .

"Norman Thomas, one of the two Executive Directors of the League, found time, in the midst of his editorial and other work of the League, to address some 7,000 students in 29 colleges in New England, New York and Middle Atlantic States, and more than 9,000 men and women in city groups. He spoke twice or more during the year in Princeton —his Alma Mater—Yale, Brown and Simmons. Among the most interesting of his meetings were his debates with Judge Huggins of the Kansas Industrial Court on 'Socialism' at the University of Pennsylvania and with Admiral Rodgers on 'Preparedness' at Yale University. . . . .

"Mr. Laidler, while engaged chiefly in administrative and research work, also spoke in a number of Eastern colleges, and, on his return from Mexico, in the colleges of the Southwest—about a dozen in all. Dr. Henry Neumann, Dr. Wm. Pickens, Frank Tannenbaum and others lectured during the year under L.I.D. auspices. Over 1,200 undergraduates have sent in their membership dues since October. The League has at present student correspondents in about 100 colleges."

With 1,200 undergraduate students having enlisted in this liberal movement in a part of one school year a quick mental calculation suggests that these and tens of thousands of others, who have become graduates under the influence of this organization, have become an important factor in the ranks of proponents of public ownership.

Supporting the suggestion already made that the inception of the public ownership program was socialistic is a declaration published in the Chicago Tribune, September 3, 1928, by John Spargo, not now a Socialist, but one-time member of the executive committee of the National Socialist Party, as follows:

"I know, and every well-informed student in America knows, that for many years public ownership and socialism have been preached in American colleges, academies, and high schools by the paid lecturers of organizations maintained for the special purpose. This was true many years before any public utility publicity bureau in this country ever made the least effort to reach those channels. These paid lecturers did not aim to present objective facts. They did not make the slightest pretense that they were aiming at anything other than converting the students to socialism, to belief in public ownership and all the economic and social changes that belief implies. I can speak with very definite knowledge and authority upon this matter, for I, myself during several years, was one of the lecturers of the Intercollegiate Socialist Society, later to be transformed into the League for Industrial Democracy."

Popular Government League

The National Popular Government League was organized in 1913 with Judson King as active head, although Robert L. Owen, then senator from Oklahoma, was listed as president. This organization advocated government ownership of all the key industries of the nation. Its chief activity has been the issuing of bulletins, leaflets and press releases with the one purpose of denouncing privately owned utilities and advocating government ownership and operation.

People's Legislative Service

The People's Legislative Service, though organized in December, 1920 with Senator Robert M. LaFollette of Wisconsin, as its chief sponsor, has continued since his death under the active direction of Basil Manly of Washington, as editor of "People's Business." It has maintained a bureau of research and information consisting of three divisions, legislative, statistical and publicity. The first analyzes and interprets proposed legislation, the second compiles information for senators and representatives who will fight for liberal measures. The third maintains a publicity division to mould public opinion through whatever means it may be able to employ.

Dismissing these three groups of liberals with what has been said, the fourth, mentioned as "carrying the ball" in the general offensive, must be referred to somewhat more fully.

Public Ownership League

The secretary of the Public Ownership League of America, Carl D. Thompson of Chicago, former Socialist Party national committeeman, whose name was offered for the Socialist presidential nomination in 1908, has stated the program of the League as follows:

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CELLOPHANE and KODAPAK

By LEE HOLTZ

EVERYONE is acquainted with the application of Cellophane as a protection to many and varied commodities in common use such as cigars, chewing gum, candy, numerous articles of clothing, flowers, including milady's orchids—and *now, Cellophane for pipe protection.*

The idea of using this particular method of pipe protection was the result of analyzing our experiences with our pipe protection practices over a period of years. It was thought that the principal reason for failure in protection was that sufficient consideration had not been given to obtaining and maintaining a bond between the coating material and the pipe. In many instances where indications of corrosion were present, we found the coating materials appeared to still have considerable life. After removing the coating, it was readily noticed that the bond between the coating and the pipe had been destroyed and that moisture had penetrated to the pipe through cracks in the coating. It was our conclusion that regardless of the kind or thickness of the coating material we had used, where the bond between the coating and the pipe is destroyed, the pipe was no longer being protected.

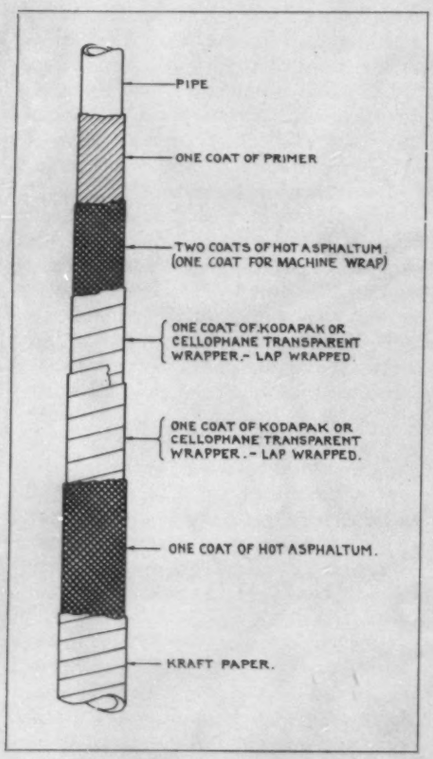

PIPE
ONE COAT OF PRIMER
TWO COATS OF HOT ASPHALTUM (ONE COAT FOR MACHINE WRAP)
ONE COAT OF KODAPAK OR CELLOPHANE TRANSPARENT WRAPPER.- LAP WRAPPED.
ONE COAT OF KODAPAK OR CELLOPHANE TRANSPARENT WRAPPER.- LAP WRAPPED.
ONE COAT OF HOT ASPHALTUM.
KRAFT PAPER.

Illustration of hand-applied asphalt and Kodapak or Cellophane transparent wrapper pipe protective coating.

Therefore, we were convinced that if it were possible to obtain and maintain a bond between the coating material and the pipe, we would derive the maximum protection from the materials used. It appears to be the consensus of opinion that soil stresses, plus the contraction or expansion of the steel pipe, are the most common causes of this bond being destroyed.

The theory employed in the use of two layers of Cellophane or Kodapak adjacent to one another, is that a slip joint or a "lubricated" surface between the inner and outer coats of asphalt or coal tar is effected. In other words, the steel pipe, the priming material, the first two layers of asphalt or coal tar, and the first layer of Cellophane or Kodapak, constitute one unit which will move freely within the second unit, consisting of a second layer of Cellophane or Kodapak, asphalt coating, and Kraft paper. This outer casing or wrapper, due to the stresses caused by expansion and contraction in the heavier types of soils, will be gripped as in a vise. The slip joint created by the two layers of Cellophane or Kodapak allows the pipe to contract and expand without breaking the bond between the coating and the pipe. From recent examinations of pipe protected as above outlined and laid in heavy adobe soils where soil stresses are very severe, it appears that our reasoning is logical.

In addition to forming a "lubricated" joint or surface, Cellophane and Kodapak are so nearly waterproof that these materials also serve admirably as a protective measure against moisture and soil impurities. These materials were subjected to laboratory tests and their water absorbing properties were found to be very low. They were also subjected to acids and alkalis for seven-day periods with apparently no visible signs of deterioration.

By reason of the fact that soil conditions are extremely variable throughout the territory served by the Southern California Gas Co., the protection of its pipe line system presents a difficult problem.

The coatings used or tested to date have been of nearly every conceivable type, among them having been cold paints of asphalt and coal tar purchased in many grades and consistencies and under countless trade names. Hot asphalt and coal tar enamels have been used with and without wrappers. Asphalt emulsions wrapped and unwrapped, asphalt mastics, Portland cement, vitreous enamels, and grease type coatings have likewise been tried.

Lee Holtz

A number of wrapping materials have also been used, among them aluminum foil, treated and untreated cotton fabric, muslin, Osnaberg, rag felt, asbestos felt, and lastly moisture-proof Cellophane and Kodapak. Cellophane is a cellulose nitrate product manufactured by the Dupont Cellophane Co., Inc., and Kodapak is a cellulose acetate product manufactured by the Eastman Kodak Co.

Of all the coatings and wrappings tested and used, only a few have shown definite merit, the majority being eliminated until such time that improvement can be made in quality and performance.

We are of the opinion that the requirements of a satisfactory pipe coating are as follows: (1) the first cost should be reasonable; (2) the coating should possess both strength and elasticity to prevent damage during handling and laying or destruction and breakage from soil stresses or pipe movements in the ground; (3) the coating should be waterproof. The following quotation is taken from Dr. Scott's report of his 1934 examinations of pipe treatments in the American Petroleum Institute test: "In the design of a coating, resistance against soil stress must be provided and materials which are impervious to moisture as possible are desired."

In our experiences, most of the cold coatings of any type thus far used have not been shown to possess all of these requirements except in soils of a very mild type. Hot coatings have been shown to be superior but require reinforcing in practically all soils to fulfill requirement No. 2 above.

Wrapping materials such as rag felt, asbestos, Osnaberg cotton fabric, and Cellophane or Kodapak have been found to be the most satisfactory to date and at this time are in general use throughout our system. Soil conditions, however, govern the type and kind of coat-

for Pipe Line Protection

General Superintendent, Manufacture and Distribution, Southern California Gas Co.

ing to be used. We have found it impractical to protect all pipe in a uniform manner in all districts. We evaluate before hand the probable corrosion hazards and select the protection suitable to each particular condition.

After considerable experience, we have found that if Cellophane or Kodapak materials are used in conjunction with hot coatings, results are obtained which are at least comparable to any protective coating we have thus far used and are, in some cases, superior.

Application

We have found that the most satisfactory method of applying this coating is in one continuous operation by means of a pipe-wrapping machine. The procedure for applying this type of coating with a machine is as follows:

After the pipe has been thoroughly cleaned, preferably by sand blasting, one thin coat of priming material is applied. After the primer has dried thoroughly (drying time is governed to a great extent by atmospheric conditions) one coat of asphalt or coal tar is applied at a temperature of 250° F. to 300° F. but never over 300° F., not less than 1/16 inch in thickness. Following this coat of hot ahphalt or coal tar one wrapping of moisture-proof Cellophane No. 300 or No. 88 regular waterproof Kodapak wrapper is applied spirally to the pipe with the joints lapped ½ inch to ¾ inch or an amount sufficient to insure that the under coat of asphalt is completely covered without a bead of asphalt forming at the seam or lap. Special care is given to the application of this wrapping over the asphalt while it is at high temperature. The second wrapper of Cellophane or Kodapak is then applied over the first wrapper in the same manner except that the lap need not exceed ½ inch, but it should not be less than ¼ inch in width. The outer coating of ashplalt is then applied at a temperature from 250° F. to 300° F. and not less than 1/16 inch in thickness. Kraft paper is then applied spirally to the pipe with each turn to lap the preceding turn from ½ inch to 1 inch.

The procedure for applying this type of coating by hand is the same as for machine wrapping with the exception that an additional coat of asphalt or coal tar is applied over the primer. Due to difficulties in hand application, this additional cost is necessary to assure that there is a continuous coating of asphalt or coal tar under the Cellophane or Kodapak.

The primer used may be simply a "cut back" of asphalt in a volatile solvent or may contain fillers or pigments such as silica or iron oxide. An analysis of the pigment type is as follows:

Pigment .....15% to 20% (Iron 80 to 85%)
(Silica 20 to 15%)
Asphalt .....20% to 25%
Solvent .....55% to 65% (Petroleum Spirits)

The asphalt used is an air blown petroleum residue conforming generally to the following analysis:

(Continued on Page 56)

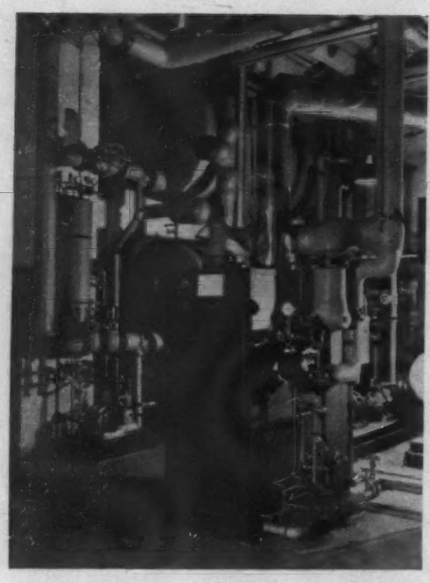
TABLE NO. 1. MATERIAL REQUIRED FOR COATING 100 LINEAL FEET OF PIPE.

Size of Pipe	Red Oxide Primer Paint No. 3972 Gals. per Coat	Protecta-Kote No. 2200 Gals. per Coat	Hot Asphalt Compound Lbs. per Coat		Felt Wrapper				Osnaberg Cotton Fabric			Kodapak Wrapper		60 Lb. Kraft Paper			
					Hand Wrapped 36 lin. ft. per Roll 30 lbs. Felt-Butted Wrap		Machine Wrapped 494 lin. ft. per Roll 40 lbs. Felt-Lapped Wrap							Field Wrapping Hand Rolls		Yard Wrapping Machine Rolls	
			Applied by Hand and Sling	Applied with Machine	No. Rolls per Wrap	Width	No. Rolls per Wrap	Width	Hand Wrapped 99 lin. ft. Per Roll No. Rolls	Machine Wrapped 1250 lin. ft. Per Roll No. Rolls	Width	No. Lbs. per Wrap †	* Width	No. Lbs. per Wrap	Width	No. Lbs. per Wrap	Width
¾″	.09	.19	11.00	8.25	9.10	1½″	.993	1½″	5.6	.444	1½″	.274	2″	1.473	3″	1.473	3″
1″	.11	.23	13.75	10.32	10.65	1½″	.774	2″	6.7	.531	1½″	.329	2″	1.690	3″	1.690	3″
1¼″	.14	.29	17.40	13.05	12.65	1½″	.921	2″	8.2	.649	1½″	.402	2″	1.975	3″	1.975	3″
1½″	.16	.34	20.00	15.00	10.58	2″	.605	3″	4.6	.364	2″	.453	2″	2.177	3″	1.932	4″
2″	.20	.42	31.10	24.90	8.41	3″	.737	3″	3.5	.277	3″	.495	3″	2.558	3″	2.275	4″
3″	.30	.62	45.80	36.65	8.75	4″	.465	6″	3.3	.261	4″	.673	6″	3.095	4″	2.745	6½″
4″	.38	.79	59.00	47.20	10.95	4″	.582	6″	4.2	.333	4″	.853	6″‡	3.820	4″	3.400	6½″
6″	.56	1.16	87.10	69.70	10.42	6″	.507	9″	5.2	.412	6″	1.236	6″‡	4.780	6½″	4.520	9½″
8″	.73	1.51	124.50	113.00	8.87	9″	.530	12″	3.6	.285	9″	1.595	6″	5.730	9½″	5.780	13″
10″	.91	1.88	155.50	140.50	8.33	12″	.682	12″	3.5	.277	12″	1.970	6″	6.950	13″	6.950	13″
12″	1.08	2.23	184.00	167.00	9.65	12″	.768	12″	4.2	.333	12″	2.333	6″	8.175	13″	8.030	19″
16″	1.35	2.79	231.00	209.50	12.00	12″	.637	18″	5.2	.412	12″	2.920	6″	10.140	13″	9.970	19″
22″	1.86	3.85	317.00	288.00	16.35	12″	.862	18″	7.1	.562	12″	3.995	6″	13.790	13″	13.540	19″
26″	2.20	4.54	375.00	340.50	19.25	12″	1.010	18″	8.4	.665	12″	4.710	6″	16.220	13″	15.930	19″

† If Cellophane is used, multiply number of pounds by 1.2. * Machine and hand-wrapped. ‡ Hand-wrapped—4″ W.

Pointing Industrial Sales to Conform with Company Aim

By D. W. CHAPMAN
Manager, Industrial Gas Sales
The Peoples Gas Light and Coke Company



Gas-fired steam boiler installed by Peoples Gas Light and Coke Co. in large apartment building to supply summer water heater requirements of 42 tenants.

IT is questionable if many gas company executives realize to a sufficiently full extent the use that can be made of industrial business to improve load factor and place companies in a strategic position to acquire business in other fields. In many quarters where industrial sales are actively promoted, little if any attention is paid to the advantages that might be gained by keeping industrial sales policies closely geared to company plan so as to achieve unity of purpose.

Due to marked changes in conditions, it became necessary recently to modify the general sales plans of The Peoples Gas Light and Coke Co. in Chicago and a study of the company's history during the last few years will serve to illustrate quite clearly the statement just made. Fortunately, that company has long been controlled by executives who appreciated the value of industrial load and who have been anxious to assist in any logical procedure to obtain it.

When the first industrial sales organization was formed, the price offered for gas was approximately 19 cents per therm. Obviously, a manufacturer was able to buy a very much greater quantity of heat in the shape of crude fuels for any given unit of cost than he could purchase in the form of city gas. A sales engineer faced with the problem of disposing of gas under the conditions just cited was compelled to stress the collateral advantages to the limit and to constantly strive to build up the value of his product in the face of the universal cry of prospective customers that "gas was out of the question because of its expensiveness."

The author has always felt that far too little credit has been given to those pioneers in the industrial gas business who steadfastly persisted in advancing sales in the industrial field against the most formidable handicaps of high prices, lack of suitable equipment, disinterestedness of management, and absence of customer acceptance. To those few men in the United States who were farsighted enough to see the advantages of gas as an industrial fuel and were too determined to be downed by the great weight of opposition, belongs the major portion of any credit which may later have been accorded to their successors.

Starting with soldering and small oven furnaces for tool dressing, industrial engineers made the initial step in introducing gas to industry and struggling inch by inch gradually forced the admission that gas is a highly satisfactory fuel for factory processes and is, in the final analysis, economical. The business grew larger; better equipment came into use and the load reached a point where its percentage of company send-out could be calculated without resort to decimal places.

In Chicago, rates were offered which gradually became more and more competitive with the prices of other fuels used by manufacturers and finally the industrial business represented more than 16 per cent of the annual output of the company. This volume of gas, which was in excess of 6 billion cubic feet in the peak year referred to, possessed an exceedingly good load factor and played an important part in building up earnings.

Up to this juncture, the sale of gas for domestic, hotel and restaurant, space heating, commercial and industrial purposes could be and was permitted to go along somewhat independently. The factory load, which was extremely light on holidays when domestic use reached its peak, helped to improve distribution load factor. From time to time as studies of cost allocations established sufficient justification, industrial rates were lowered to reflect the decreased cost of supplying that type of service. Strenuous sales efforts were continued in all departments but there was no need for an attempt to complement additional sales in one field by corresponding volumes from another.

In due course of time it became apparent that the interests of The Peoples Gas Light and Coke Co., its customers, and the community at large could best be served by bringing in a supply of natural gas from the fields of the Texas Panhandle. If a sufficient volume of gas could be handled, there was an opportunity to make a slight reduction in price to all customers of the company, to improve living conditions for the community through the more general use of a smokeless fuel, and to make possible future reductions in price to customers which would have been unattainable on the manufactured gas basis. The most important element in this new proposition was the problem of securing volume, for only through handling great quantities of natural gas at high load factor was it possible to establish an economic operating condition.

In spite of the great use of fuel in a city as large as Chicago, only two fields —house heating and industrial—offered possibilities to justify the investment involved in pipe line facilities to transport natural gas for a distance of nearly a thousand miles. The house heating business, large in volume and obtainable at a reasonably high price level, lacked enough continuity of use to justify the investment. Large blocks of industrial business, which as regards volume and load factor offered a seemingly satisfactory outlet, could not be taken on at high enough prices to pay the fixed charges which would be occasioned by the expenditure for the proposed pipe line.

Here was a situation where two immense sales fields, neither one self-sufficient, when properly correlated furnished the means of solving an otherwise unsolvable riddle.

As the space heating campaign, which

(Continued on Page 64)

LEFT: Cleveland building of the A.G.A. Testing Laboratories. RIGHT: Pacific Coast branch, established in 1931.

Testing Laboratories Round Out First Decade of Service

By HARRY W. SMITH, Jr.

Publications Department
A. G. A. Testing Laboratories

TEN years ago the American gas industry brought to the point of realization long cherished plans for the establishment of a centralized gas appliance testing laboratory, charged with the execution of a continuing national program of equipment standardization and certification. *Western Gas* in its first issue—that of May, 1925—reported the departure from Portland, Ore., of R. M. Conner, to assume direction of the American Gas Association Testing Laboratories at Cleveland, Ohio. Since that time the various phases of the Laboratories' expanding service have been brought frequently to the notice of our readers. Now, as the industry's valued research organization celebrates its 10th anniversary, it is a pleasure to present the following recapitulation of its growth and service.—*Editor.*

PRIOR to 1915 the American gas industry had no comprehensive national standards upon the basis of which the suitability of appliances for domestic use could be judged. Nor did it possess any means of definitely assuring consumers of satisfactory appliance performance and construction characteristics at the time of purchase. Specifications for gas ranges and certain other kinds of domestic equipment had been developed by committees of the gas industry, but these standards were used merely as guides for appliance manufacturers and utility companies. Compliance was entirely voluntary and by no means general throughout the range of merchandised equipment.

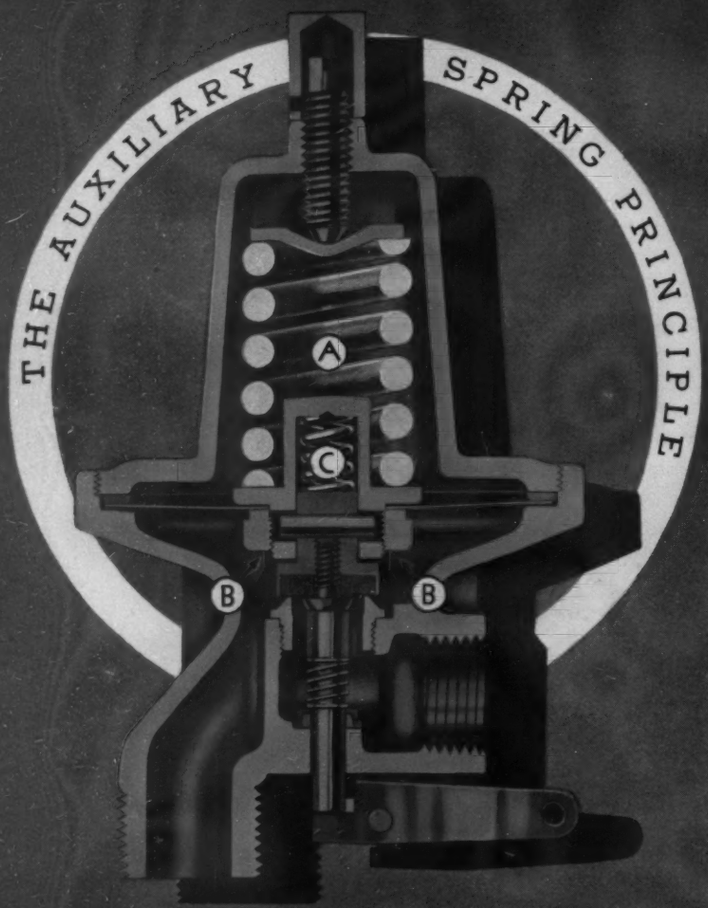
In 1915, however, the task of preparing a nationally acceptable Gas Safety Code, a manual setting forth the fundamental principles of gas utilization, was undertaken jointly by a committee representing the National Bureau of Standards and two major associations of the gas business later consolidated into the American Gas Association. In 1920 the work of completing the code was turned over to the American Engineering Standards Committee, and in 1925 it was approved as a Tentative American Engineering Standard. Later it became an American Standard (1927) by action of the American Standards Association, the leading agency of industrial, commercial, and consumer standardization of products in this country.

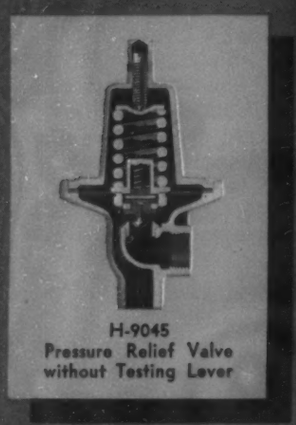
Thus, when the American Gas Association embarked in 1925 upon its now familiar program of extensive gas appliance testing and certification, it had as a guide only certain partially developed and inadequately employed standards of appliance construction and operation and the Gas Safety Code. The Gas Safety Code, however, was sound and basic, and all of the various sets of appliance accessory and installation requirements subsequently formulated by the American Gas Association, and now almost universally met by new designs of gas consuming and controlling equipment, have been prepared in conformity with its precepts.

The American Gas Association organized the Testing Laboratories in Cleveland, and began operations therein on June 1, 1925. Here the experience of several utility and manufacturing companies which had long supported appliance testing and development laboratories of their own, stood the organizers in good stead. Among those involved in laying the final plans were such leaders in the gas business as H. C. Abell, J. B. Klumpp, R. W. Gallagher, R. B. Harper, William J. Serrill, Col. Oscar H. Fogg, J. B. Mullaney, N. T. Sellman and A. H. Hall. There were also numerous others, outside the Association's own staff, who played most important roles in the foundation of this national gas appliance testing and research establishment.

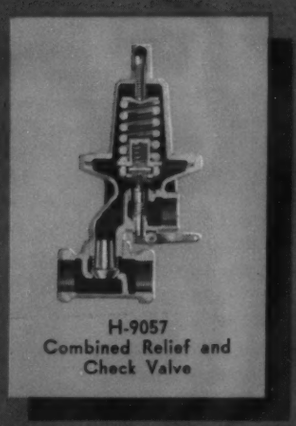
Testing space was first obtained on the second floor of one of the buildings of the No. 2 plant of the East Ohio Gas Co., and office space was secured on the first floor of another. Equipment was obtained in part from manufacturer members of the Association, and funds were supplied by the American Gas Association's member gas companies. The beginning was indeed modest, but the activities engaged in were to prove so helpful to all concerned that considerable expansion was to come quickly.

The institution was devoted primarily to research and testing incident to the development and enforcement of national standards of safe and efficient gas utilization. In the first year of its operation 13 different types of flexible gas tubing and 668 separate models of gas ranges were tested and approved by the Laboratory in accordance with requirements laid down by committees of the Association appointed for this purpose. Rapidly other manufacturers began to fall into line and to submit their appli-

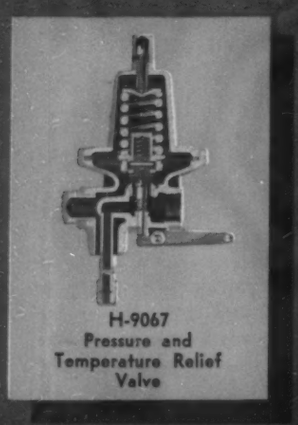




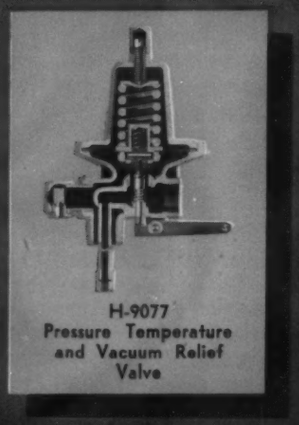
H-9045
Pressure Relief Valve
without Testing Lever



H-9057
Combined Relief and
Check Valve



H-9067
Pressure and
Temperature Relief
Valve



H-9077
Pressure Temperature
and Vacuum Relief
Valve

You get this REVOLUTIONARY FEATURE

only in Mueller Relief Valves

NOW that the quick heat of gas firing is being applied to domestic hot water storage heaters and hot water heating boilers, the important job of relieving pressure has become too vital to entrust to ordinary relief valves or mere spring loaded pop valves.

That is why this new Mueller principle of relief valve construction has been given such a resounding welcome. It assures an accuracy of operation that has never before been possible.

Practical experience has shown that the relief valve which opens easiest, and closes tightest, is a valve equipped with a comparatively SOFT composition seat. Hard composition will often groove into the seat and stick to it. After such a valve is opened, the hard disc is likely to be held away from the seat by foreign matter.

In the present line of Mueller relief valves a means has been devised to remove this heavy load from the disc. Note, in the illustration, that the pressure of the heavy diaphragm spring (A) is carried by stops (B-B) in the valve body. The light auxiliary spring (C) takes care of initial seating of the disc aided in service by the pressure within the body. Tests prove that valves so constructed positively open at the set pressure and close tight when the pressure recedes below the setting.

This principle is applied ONLY in Mueller Relief Valves. It is employed in all Mueller pressure relief valves, pressure and temperature relief valves, and pressure temperature and vacuum relief valves. It is also used in the relief element of the Mueller System for automatic control of hot water heating systems.

ASK FOR new catalog covering Mueller Valve Specialties in detail.

Mueller products also embrace a complete line of gas distribution equipment including gas regulators, district governors, and station regulators.

MUELLER CO., Decatur, Illinois

Factories: Decatur, Ill.; Chattanooga, Tenn.; Los Angeles, Calif.; Sarnia, Ont.

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MUELLER

PRESSURE and TEMPERATURE RELIEF VALVES

ances to the Laboratory for test and certification. The A. G. A. Laboratory Seal of Approval began to acquire significance in the eyes of users of gas. In fact, the Laboratory program had been under way only about two years when the American Gas Association at its annual convention acted to recommend to all member companies that no appliances be merchandized by them unless they bore the Laboratory Seal of Approval. The program had been successfully launched. The value of national gas appliance construction and performance standards had been proven and the benefits to be derived from equipment certification in accordance therewith demonstrated. A national movement within a great industry had been set in motion. A new step in customer service had been taken. Growth was inevitable.

Permanent Building

First among the major milestones of Laboratory growth was the construction and occupation of the present building at 1032 East 62nd Street, Cleveland, Ohio, especially designed to meet the Laboratory's requirements. This was in 1928. Land for the new building was purchased, careful plans made, and the largest and best gas appliance testing laboratory in the world erected and equipped at a cost to the Association of over a quarter of a million dollars. Any of the countless visitors who have inspected the Cleveland premises will attest to the wisdom and economy of the expenditure. Large serviceable rooms are devoted to each type of equipment testing regularly performed. Other rooms are provided for reserach and for manufacturers' private use in effecting appliance modifications necessitated frequently in order to meet approval standards. Comfortable library, office, secretarial, and conference quarters are included. Four test gas holders of 5,000 cubic foot capacity each stand at the rear of the structure along with the booster house, butane-air plant, and purifier equipment. Lines for the conduct of three different test gases, compressed air, water, vacuum, high pressure gas, and steam are carried into each of 14 test rooms and fitted with convenient banks of outlets at three or four times as many locations. No need of gas appliance or accessory testing and research engineers has been overlooked, and the whole has been arranged so as to foster maximum efficiency.

Pacific Coast Branch

However, even with these modern facilities further expansion was necessitated in 1931. So many manufacturers on the Pacific Coast had made a regular practice of submitting all new models and products for certification, that a branch of the Laboratories was rendered desirable to curtail the sizeable expenditures of shipping test appliances to and from Cleveland, save time to western manufacturers in securing approval, and minimize the traveling costs of annual Laboratory inspections. Correspondingly suitable quarters were leased at 718 Towne Avenue, Los Angeles, Calif., and the major portion of the Cleveland Laboratory equipment duplicated on the West Coast. At the present time some 56 to 60 manufacturers are served by the Pacific Coast Branch of the Laboratories, and approximately 160 to 180 by the Cleveland staff.

There is no testing or certification work conducted by the Association that cannot be equally well executed at either location, although most of the research, committee, and administrative activities of the Laboratories are centered at the larger and more central Cleveland plant. The Los Angeles Laboratory has now completed more than four years of service to the industry on the Pacific Coast and the results of its work stand as more than ample justification for its establishment. Not only has it saved western manufacturers considerable time, trouble, and money in procuring American Gas Association endorsement for their products, but has, as well, acted as a helpful and capable counsellor on matters of local concern to both manufacturers and gas companies on the Pacific Coast. Closer cooperation has resulted in the development and revision of national standards for gas appliances and accessories and more sympathetic assistance given in their application.

Progress Summary

The present status and functioning of the American Gas Association Laboratories indicate notable progress during the past decade. At present, requirements approved as American Standards by the American Standards Association, exist for 28 different varieties of gas appliances and their accessories. Gas ranges, water heaters, radiant heaters, circulators, warm air furnaces, boilers, gas-steam and hot water radiators, floor furnaces, unit heaters, hot plates and laundry stoves, clothes dryers, gas-heated ironers, hotel and restaurant ranges, incinerators, industrial gas boilers, gas refrigerators, private garage heaters, flexible gas tubing, conversion burners, gas burner valves, pressure regulators, temperature, pressure, and vacuum relief valves, automatic gas shut-off valves, thermostats, semi-rigid gas appliance tubing and fittings, automatic main gas-control valves, draft hoods, and thermostatic pilots, are all covered by appropriate sets of approval or listing requirements. In addition, approval standards for gas hair dryers are now being formed, while requirements for the installation of conversion burners in house heating and water heating appliances or for house piping and appliance installation have been formulated and in use for several years.

All approval, listing, and installation standards are developed under the jurisdiction of the A. G. A. Approval Requirements Committee, which is also a Sectional Committee (Project Z21) of the American Standards Association. The membership of this committee comprises expert representatives of every interested national element, including producers, consumers, and general interest groups. In addition to gas company and manufacturer representatives from both the United States and Canada, the Committee also includes members representing all interested national bodies such as the National Bureau of Standards, U. S. Bureau of Mines, U. S. Public Health Service, U. S. Bureau of Home Economics, American Home Economics Association, National Safety Council, Master Plumbers' Association, Heating and Piping Contractors' National Association, American Institute of Architects, and Associated Factory Mutual Fire Insurance Companies. Operating under this committee are some 32 standing sub-committees, one for each type of appliance or accessory for which standards are prepared. Each of these subcommittees includes an equal number of gas company and appliance or accessory manufacturer representatives, the latter being manufacturers of the particular product for which requirements are developed. The extensiveness of this legislative branch of the testing and approval program is evidenced by the fact that these various committees have a total membership of 284 experts from all parts of the United States and Canada, all of which devote a considerable portion of their time to this work.

In the initial formulation or regular revision and modernization of requirements, first action is taken by the appropriate subcommittees from suggestions proffered by either its members, the Laboratories, or leaders in the gas industry. Each item is carefully discussed, and usually, depending upon its nature, referred to the Laboratories for study, technical research, survey, or preliminary formulation. After acceptance by the proper sub-committee, requirements are printed and submitted to all interests in the gas industry and others throughout the country for criticism and comment. Later each individual matter is reconsidered by the initiating subgroup in the

(Continued on Page 50)

Sales Experiences in Small Towns During Introductory Period

Load Building on Northern Natural's System

By RAY L. HARRISON

Superintendent of Distribution, Peoples Natural Gas Company, Omaha, Nebraska

FROM the Texas Panhandle gas field to the headwaters of the Mississippi River in Minnesota, a distance of approximately 850 miles, stretches the natural gas pipe line of the Northern Natural Gas Co. In the comparatively short space of four and one half years over 2,000 miles of main and branch lines have been constructed, serving 152 cities, towns, and villages with a total population of approximately 1,400,000 people and 308,000 customers.

Ray L. Harrison

Of these 152 communities, 93, representing 293,000 customers, are served through various distributing companies through town border purchase from the pipe line company.

The Northern Natural Gas Co. operating through its distributing subsidiaries is engaged in retail sales only to a very limited extent, serving usually small communities adjacent to its lines and in territory not served by the larger utility systems. The sales plans outlined herein apply only to the communities served directly by the distributing subsidiaries of the Northern Natural Gas Co.

The number of communities served by these subsidiaries is 59, having a population of 95,425, consisting in the most part of small towns ranging in population from 250 to 1,500 people with only four towns above 5,000 population. The average population per town is 1,618. These communities are all located in highly prosperous agricultural territory with homes and business places typical of the rural communities.

The development of the business must of necessity be through the domestic and commercial sources, thus limiting it largely to cooking and space heating.

Initial Sales Plans

The development of the cooking load came on very rapidly and within a three and one-half year period a meter saturation of 81.6 per cent (ratio of 1 to 5 per capita) was attained. In the sale of ranges, no special selling inducements were offered. In fact during the past two years ranges have been sold at the regular list price with terms 25 per cent down and 12 months for the balance.

In the development of the water heating and house heating load, our experience has been that the sales in this line of equipment must be prosecuted vigorously and with special inducement features from the very beginning if the property is to show any fair return within a reasonable period of time.

For the first three and one-half years of this development, the usual straight selling plan was adopted with the 10 per cent down payment and monthly payments extending over a period of three years. This resulted in an average house heating saturation ratio of 45.1 per cent.

The sales during the introductory period were, as was to be expected, largely of the "cream" type, representing the more comfortably situated class. It then became evident, if we were to expand the heating business

(Continued on Page 69)

PROVISIONS OF NORTHERN NATURAL GAS CO. RENTAL-TRIAL PERIOD PLAN CONTRACT

1. Company agrees to install said equipment upon the premises of Customer at his address above stated.

2. The rental payable by Customer hereunder shall be the sum of.....Dollars, payable in installments of..... Dollars ($.....) Cents, per month in advance during the term hereof, commencing with intitial payment on the.....day of.....193....

In case of any default by Customer in rental payment, or in any other of the terms, agreements and conditions hereof, Company at its election may cancel this agreement and remove said equipment without prejudice to its other rights and remedies for such default.

3. The term of said leasing shall be from .....193.... to .....193...., subject to the right of Customer to require removal of said equipment upon payment in full of unpaid and accrued rental and for gas delivered to Customer not previously paid for.

4. Customer is hereby granted the option at any time during the term hereof to purchase said equipment upon entering into Company's standard form of installment sales agreement, upon the following terms, namely:

Purchase Price . . . . $.....
Down Payment . . . $.....
Twenty-five monthly installments, each $.....

In event of exercise of said option, rental payments made under paragraph 2 hereof shall be credited upon said purchase price.

If Customer shall not exercise said option on or prior to.....193...., said option shall lapse and Company shall be permitted to remove said equipment within a reasonable time after said date, free of all encumbrances or claims.

5. Title to and ownership and right of possession of said equipment at all times shall be in Company until payment in full of the purchase price therefor.

6. Customer agrees at all times to maintain said equipment in good and efficient condition, to use it carefully and to indemnify and save harmless Company against loss, damage or expense arising from or growing out of the maintenance or operation of said equipment.

In the case of furnace burners, Customer agrees to be fully responsible for the storage and safe keeping of any furnace accessories such as grates and tile that may have been removed in order to make the gas burner installation.

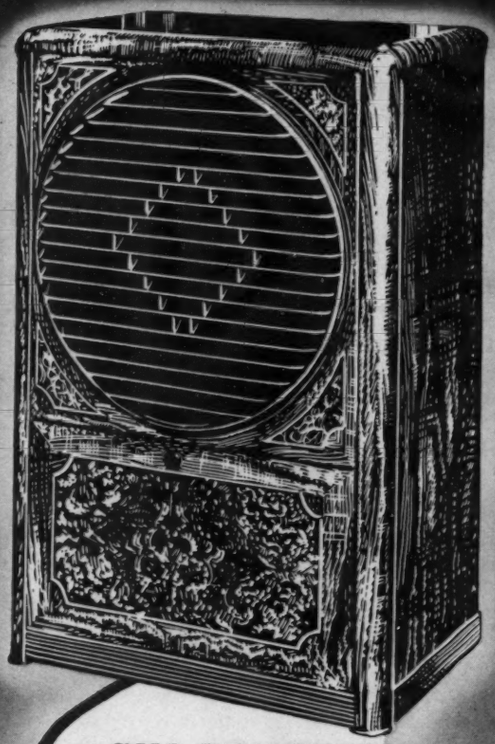
7. Customer represents that he had read the terms and conditions upon the reverse side hereof, and that the same are a part of this agreement to the same extent as if set forth above his signature hereto. (Terms and conditions referred to provide as follows: Customer agrees not to permit any other person than Customer to have possession, custody or control of said equipment, and not to assign, transfer, mortgage or sell the same, or this agreement, or any right, title or interest in said equipment, and not to allow the same to be removed from said premises of Customer without written consent of Company endorsed hereon. Customer further agrees to allow Company, its agents or employees, at all reasonable times to enter said premises and examine said equipment.)

8. This agreement is subject to approval by the Credit Department of Company, and shall not be obligatory upon Company until such approval shall be noted hereon.

9. This agreement supersedes any prior understanding or arrangement, oral or written, between the parties hereto in relation to said equipment, and contains the entire agreement in reference thereto.

This agreement shall be obligatory upon the successors and assigns of Company, and the heirs, personal representatives and assigns of Customer.

More than A GAS HEATER IT'S A GRANDAIRE!



GILL DESIGNED

ELIMINATES "COLD 70"
COMPLETELY AUTOMATIC
CONTROLLED HUMIDIFICATION
FORCED AIR CIRCULATION
FILTERS AIR
BEFORE HEATING
RATED INPUT 50,000 BTU
EFFICIENCY 83 PER CENT
QUIET OPERATION
ABSOLUTELY SAFE
ECONOMICAL

HEATER • HUMIDIFIER
CONDITIONER • CIRCULATOR
IN ONE GRANDAIRE UNIT

After three years of continuous research and testing, the makers of Grand and XL Gas Ranges offer an entirely new type of gas-fired circulating heater—the GRANDAIRE. Combining the finest features of forced air circulation, humidification, air filtration and efficient heating, GRANDAIRE is destined soon to become the gas industry's "best seller."

The potential prospects for GRANDAIRE are unlimited—homes, apartments, factories, stores, shops, restaurants, garages,—literally thousands of places where the comfort, health and safety of the occupants are considered—should have, and can afford to have a GRANDAIRE.

We invite you to write or wire at once for full details about

Grandaire

Approved by American Gas Association Testing Laboratories

THE CLEVELAND CO-OPERATIVE STOVE CO.
Cleveland, Ohio

Gentlemen:

Please send me additional information, specifications, prices, discounts, etc. about the Grandaire.

Name _____

Company _____

Street and No. _____

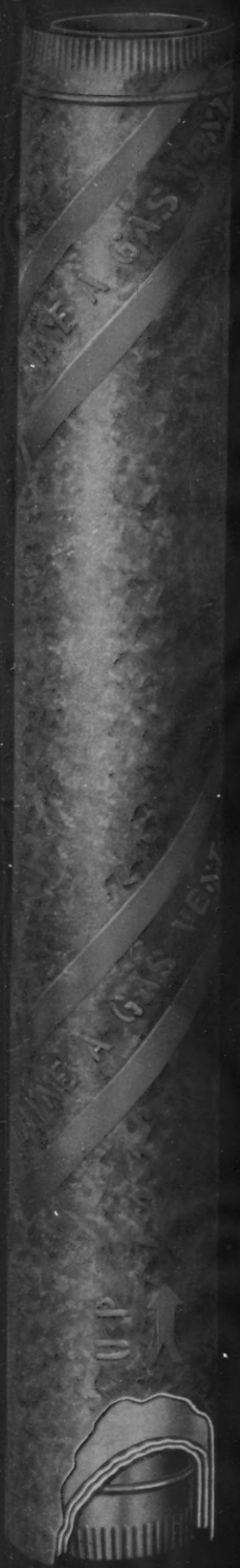
City and State _____

THE CLEVELAND CO-OPERATIVE STOVE CO.
CLEVELAND, OHIO

SEE THE GRANDAIRE AT THE A. G. A. CONVENTION AT THE PALMER HOUSE IN CHICAGO

OK

PAYNE "A" GAS VENT



NON-CORROSIVE • • • INSULATING

● The Only metallic, insulated vent pipe for gas appliances which has been listed by the Underwriters' Laboratories as well as receiving the approvals of the Pacific Coast Building Officials Conference and the Building and Safety Departments of practically every city where such approval has been required or requested.

The 99% pure aluminum inner tube of Payne "A" Vent Pipe is non-corrosive. Products of combustion from natural or manufactured gas have no deteriorating effect on the superior grade of aluminum used in its manufacture. The inner tube heats rapidly—producing an immediate stack temperature.

Aircell asbestos insulation around this inner tube prevents cooling of products of combustion eliminating difficulties with condensate. The uniform stack temperature, combined with the insulation make this pipe extremely efficient, thereby producing the best possible results from the appliances so vented.

An outer casing of galvanized iron gives protection for the insulation against disintegration through exposure to moisture, as well as adding strength and durability to the features embodied in Payne "A" Vent.

Payne "A" Gas Vent is distinguished from plain galvanized iron and other vent pipes by a spiral orange stripe for prompt identification. This marking is also being copyrighted for the protection of those interested in the proper venting of gas burning appliances.

PAYNE FURNACE & SUPPLY COMPANY

BEVERLY HILLS • • • CALIFORNIA

Proper installation assures complete combustion, efficient operation of gas appliance and carrying off of products of combustion.

● C. E. PICKUP, Southern California Gas Co., Los Angeles, Calif., in report to Sub-Committee on Internal Corrosion and Dehydration, Technical Section, Pacific Coast Gas Association Annual Convention, Pasadena, Calif., September 17 to 19, 1935—(Abstract by WESTERN GAS).

Experience with the Dehydration of Natural Gas by Atmospheric Cooling

THE dehumidification of natural gas insures against the deposition of water in gas transmission mains by lowering the dew point of the gas to a point slightly under the minimum temperature encountered in the lines. This in turn mitigates internal corrosion and increases pipe line capacity. Dehumidification can be accomplished by the use of an apparatus designed to atmospherically cool a heat exchange medium, such as water, to a temperature that approaches atmospheric wet bulb and directing the cooled water over a series of thin metallic coils or tubes carrying the natural gas.

C. E. Pickup

On July 16, 1934, the Southern California Gas Co. completed and placed in service a natural gas dehydration plant in the Kettleman Hills North Dome district. This plant employs the method of dehydration by atmospheric cooling and has been successfully operated since the above date. A brief description of the plant is as follows:

The cooling tower is a Fluor XA-12C aerator type constructed of redwood and having 12 double decks. The overall dimensions are, width 25 feet, length 125 feet and height 42 feet. This tower is designed to cool 1,800 gallons of water per minute from 63° F. to 58° F. when the wet bulb is 55° F. and when the wind velocity is 3 miles an hour or more. The gas cooling sections are designed for a working pressure of 450 lbs. per sq. in. at a temperature of 100° F.

The water pumps, two in number, are the horizontal double suction centrifugal type capable of delivering 1,400 G.P.M. of cold water against a 60-foot head in continuous operation, and 1,800 G.P.M. with a moderate increase in speed; both conditions with a mechanical efficiency of 75 per cent or more. The power for these units is furnished by two direct connected gas engines having a piston speed of not more than 1,000 F.P.M. and a M.E.P. of not more than 55 lbs. per sq. in. when the pumps are delivering 1,400 G.P.M. These engines are capable of providing the required speed and power for a 25 per cent increase in the pump discharge.

The gas scrubbers, three in number, installed on the discharge header, are of the Henderson design down flow, cone type, baffle scrubber. They are 5 feet in diameter and 6 feet 2 inches in height having ample reservoir capacity and a gas capacity of approximately 30 MM c.f. each per day. This type scrubber is described, with diagrams, in *Western Gas* for January, 1935, Page 17.

The daily average of the plant operation data from August, 1934 to August, 1935 is as follows:

Volume of gas treated in standard M c.f.	77,370
Plant pressure lbs. per sq. in. gauge	394
Plant intake temperature °F.	88
Plant discharge temperature °F.	61
Temperature of water above coils °F.	57
Temperature of wet bulb °F.	54
Temperature of dry bulb °F.	65
Water circulated G. P. M.	1,150
Water extracted from gas gals. per M c.f.	7.32
Water used in pond make-up, gals.	19,183
Ground temperature at 3 ft. depth °F.	75

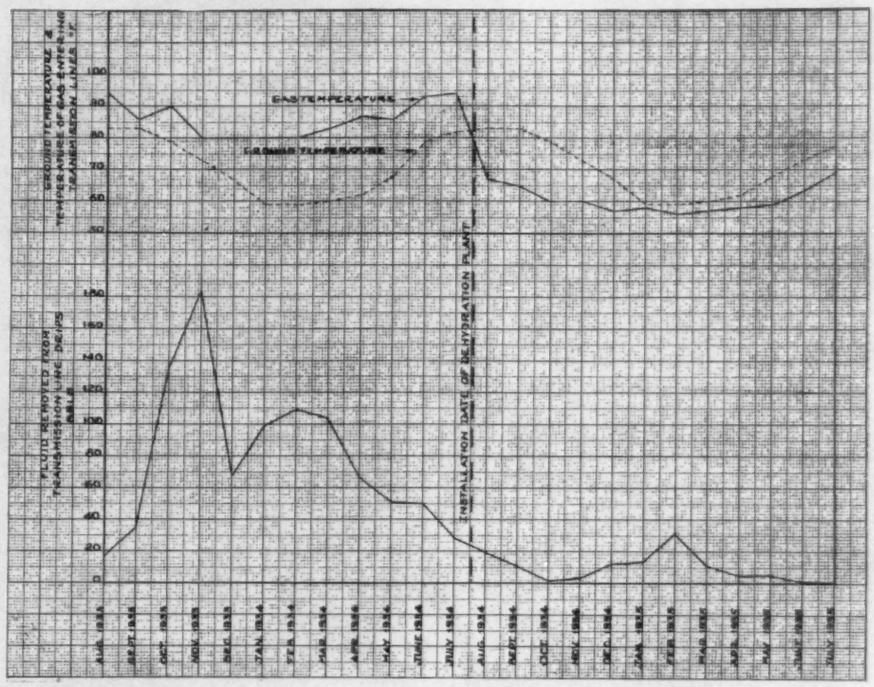


FIG. 1. Transmission lines prior and subsequent to installation of gas dehydration plant.

The relationship between gas volumes, temperatures of the gas, ground temperature at pipe line depth and fluid recovered in the transmission lines prior and subsequent to the installation of the gas dehydration plant is shown in Fig. 1. It will be noted that the average of the ground temperature is well above the average temperature of the gas entering the transmission system.

The curve shows a marked decrease in the amount of fluid removed from the transmission line drips during the period subsequent to the installation of the dehydration plant, in spite of considerably greater volumes of gas handled during this year of dehydration. The fluid removed from these drips prior to the plant installation was roughly 90 per cent water. With the exception of the first month, the fluid recovered from the drips after the installation of the plant was mostly a highly emulsified oil containing little or no water.

In March, 1935 a series of tests were conducted on the intake and discharge gases to determine the sulphur content and the amount of sulphur removed by the dehydration process. The tests made by the "Referee Method" showed the following average results:

Sulphur content intake gas ....gr. per 100 cu. ft.	.005840
Sulphur content discharge gas ....gr. per 100 cu. ft.	.002505
Per cent sulphur removed.....	42.9

Formation of Natural Gas Hydrates

The combination of certain gases with water forming crystalline compounds (natural gas hydrates) at high pressures and at temperatures above the normal freezing point of water, presents a problem in dehydration by atmospheric cooling during the colder seasons of the year. In gas dehydration plants using ammonia as a refrigerant, the same phenomenon has been observed. Formerly it was supposed that these hydrates, having the appearance of honeycombed snow, were formed under freezing temperature conditions, whereas, experience in the operation of this plant has shown that crystalline gas hydrates can be formed in the cooling coils with gas temperatures at or below 54° F.

Primarily the formation of gas hydrates depends upon the temperature, pressure and composition of the gas, both low temperatures and high pressures being favorable to their formation. It is quite probable that pressure fluctuations allowing intermittent liquefaction and vaporization of the more volatile hydrocarbons, could also present favorable conditions to hydrate formation.

Experience in the operation of the Kettleman Hills plant during the past year has shown that the formation of these hydrates is greatly accelerated after a few gas coils become partially plugged with the formation. These partially plugged coils cause an excessive pressure drop which must soon be detected and remedied, or the passages will become filled with solid hydrates. Various methods have been employed in the removal of these hydrates, but little success has been had in eliminating possibility of their formation.

ANNUAL OPERATING COSTS AND FIXED CHARGES FOR DEHYDRATION PLANT.
August, 1934, to August, 1935.

Fixed Charges		
Taxes	$ 816.65	
Interest on investment (7% of $48,037.95)	3,362.66	
Depreciation of plant equipment (10 year life, 6% sinking fund)	3,644.64	
Total Fixed Charges		$7,823.95
Operation Costs		
Labor	$2,620.00	
Lubricants	88.25	
Misc. supplies and expense	246.00	
Fuel	128.50	
Light, power and water	3,857.50	
Total Operation Costs		$6,940.25
Maintenance Costs		
Structures	$ 1.50	
Equipment	224.00	
Auxiliary equipment	332.00	
Station piping	250.00	
Total Maintenance Costs		$ 807.50
Total Annual Fixed Charges and Operating Expenses		$15,571.70

$\frac{\$15,571.70}{27,457,270} = \$.000567 = .57$ mills per M c.f. = average cost of dehydrating.

Should Leaking Range Valves and Hose Cocks be Repaired or Replaced?

● **HUGO N. JOHNSON, Los Angeles Gas and Electric Corp., addressing Technical Section, Pacific Coast Gas Association Annual Convention, Pasadena, Calif., September 17 to 19, 1935—(Abstract by WESTERN GAS).**

THE purpose of this study was to attempt an answer to the question, whether it would be more economical to replace a worn-out range valve or hose cock free of charge than to be continually servicing such equipment.

The present practice is to graphite and secure the cores of range valves and hose cocks when found leaking. In many cases the cores are worn to such an extent that any repairs attempted are of a temporary nature. When such conditions are found, an attempt is made to sell the consumer a new valve, in order to avoid further leakage. However, the consumer does not always see fit to purchase a new valve and there is a possibility of future service calls.

In order to determine the number of leaks involving range valves and hose cocks and what percentage of these were "repeat calls," a survey of leak orders for 1933 was made. Due to the fact that there were 26,888 leaks at appliances recorded for 1933, it was felt that a spot check could be made, the result being applied as a percentage to the entire district. Three districts were selected as being most representative and approximately 2,000 leak orders were inspected. It was found that 30.6 per cent of these involved leaks at range valves and/or hose cocks. In 4.3 per cent of the cases, it was found that second and third calls were made at the same address to graphite the core of a leaky valve or cock that had been previously serviced. If this 4.3 per cent "repeat calls" be applied to the total leaks of this type taken care of in 1933, it can be assumed that 1,156 "repeat calls" were made.

In order to determine the unit cost to repair leaking valves and hose cocks, an inspection of leak orders was made. It was found that an average of 25 minutes was required to complete each order. With labor at $0.75 per hour, this would amount to $0.31 per order. Assuming transportation to be about 5 miles per job at a cost of $0.05 per mile, there would be an additional $0.25 per order. The distance traveled per job for leak complaints is higher than for ordinary types of service inasmuch as leaks are taken care of as soon as received, regardless of location. Adding 15 per cent for contingencies, the total cost of each completed leak order is found to be approximately $0.65.

The cost to the company of a range valve or a ½-inch hose cock is $0.25. Using 1,156 "repeat" calls as a basis, it will be seen that it cost $751.40 (1156 x $0.65) as compared to $289.00 (1156 x $0.25) if we had installed new valves instead of attempting to repair the defective ones. This represents a net loss of $462.40 for the year, which is equivalent to 6 per cent interest on $7,700.

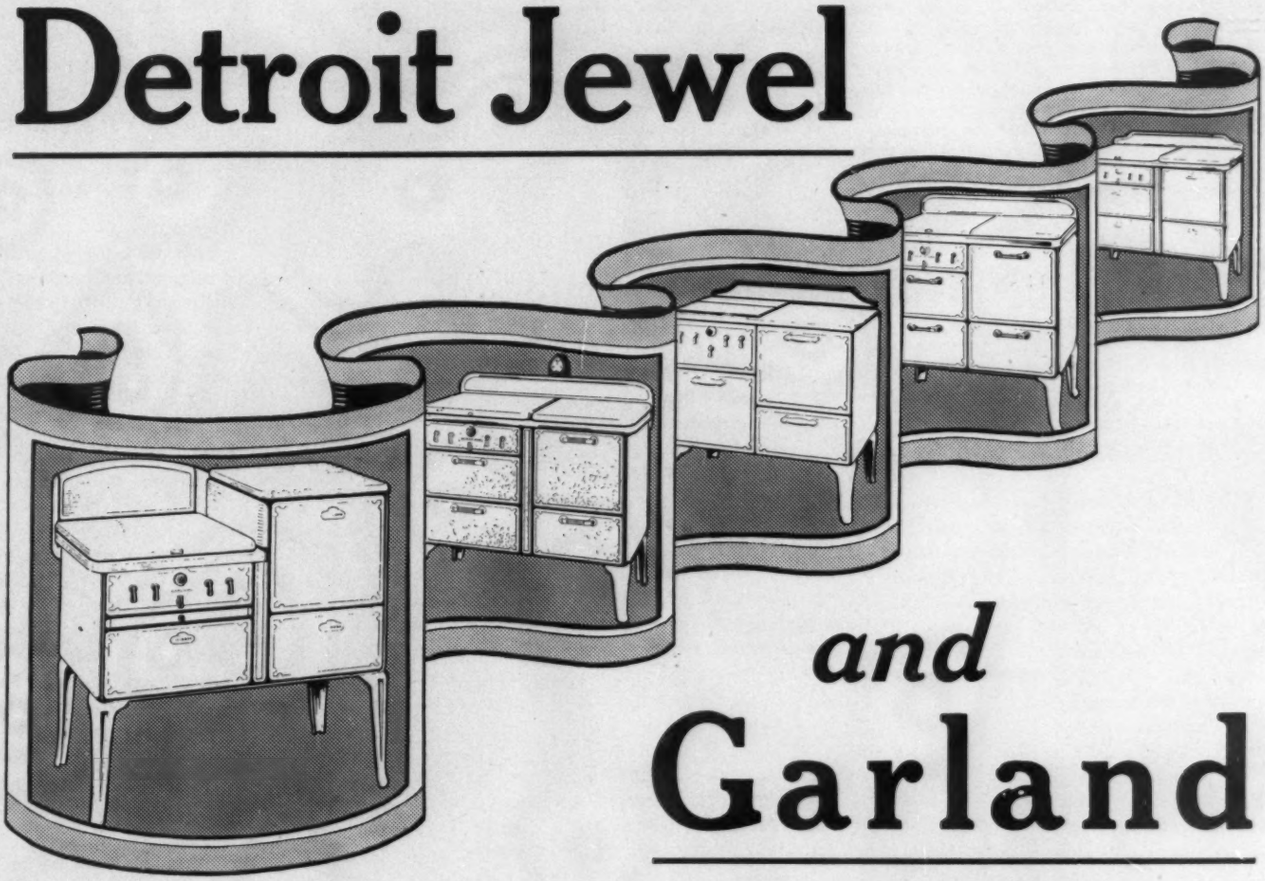
It is not recommended that new valves be installed gratis except in unusual cases. If valves were exchanged whenever a leaky one was found, and this fact became universally known, the company could be easily victimized, especially in respect to apartment houses. It might be difficult to convince the manager or tenant just which valves can be repaired satisfactorily and which must be replaced; especially if there is no charge. Differences in opinion could easily result in ill-will, and this is to be avoided.

The best policy is to reduce the charge for a new valve or cock to cost, thus offering the consumer every incentive to purchase a new one at bargain prices. However, in the event the consumer is financially unable or does not see fit to replace a defective valve, it is recommended that new valves be installed gratis in only the following cases:

1. Where the pin or stop is broken off in the valve core so that it may be turned beyond the "off" position, creating a potential hazard.

2. Where the valve must be removed to make it safe. Data on the leak orders in-

Detroit Jewel



and Garland

Gas Ranges

THEY HAVE BEAUTY APPEAL ~ THEY HAVE VALUE APPEAL

A REVIEW of the records of brilliant achievements in the recent A.G.A. campaign reveals, again, the repeated findings in range selling successes . . . . . that quality wins! The superiorities of the Detroit Jewel Ranges and Garland Gas Ranges, meeting the public's demand for real value in quality built ranges, played a leading role in the records of the winners. The new Detroit Jewel and Garland Gas Ranges have the beauty, performance and value appeal necessary to step up your fall sales to new volume peaks. Get in touch with us at once for complete information about these new "Fall Pace Makers."

DETROIT-MICHIGAN STOVE CO.

Detroit, Michigan

spected showed that in 6 per cent of the cases the meterman had to remove the valve (mostly hose cocks connecting space heaters) to stop the leak. An investment of $0.25 in a new valve is very small as compared to the interruption of gas service in cases such as this. Days may elapse before the consumer considers the purchase of a new valve, a delay representing a loss in gas revenue. In fact, the gas company may be called out to install the new valve which may have been purchased in the 10c store.

3. If the meterman has previously been at that particular address to service the same valve.

4. If, in the meterman's opinion, the valve is in such poor condition that a second call is inevitable and is convinced that the consumer cannot afford to buy a new one.

Requirements for Domestic Regulators

● F. O. SUFFRON, Research Engineer, A.G.A. Testing Laboratory, Cleveland, Ohio; addressing A.G.A. Twelfth Annual Distribution Conference, Cleveland, May 2-4, 1935—(Abstract by WESTERN GAS):

THE various approval requirements of the American Gas Association specify that combustion shall be satisfactory on appliances throughout a range of gas pressures from 50 per cent below to 25 or 50 per cent above the normal adjustment pressure. Thus an appliance must meet strict combustion requirements, if a governor is not provided to alleviate pressure fluctuations, at an input rate as much as 22.5 per cent in excess of the normal approved input rating at which air shutter and other adjustments were made. It is evident that if the appliance was not required to cope with pressure fluctuations, it would be possible to increase its approved input rate by 22.5 per cent and thereby elevate considerably its heating capacity while still retaining desirable and essential combustion characteristics.

F. O. Suffron

In Fig. 1 are three photographs of range top burner flames when operating at normal adjustment pressure and at pressures 50 per cent below and 25 per cent above the adjustment point. The effects produced on flame heights by pressure fluctuations are clearly evident from these photographs.

Rather than make any sacrifice in economy and heating capacity which unavoidable pressure fluctuation usually entails, it would seem much better practice to furnish each appliance with a regulator or governor, and design the appliance to yield its maximum efficiency at a predetermined input rate.

Because of the increasing importance of gas appliance pressure regulators it was only natural when the Association inaugurated its program for preparing listing standards for all important gas appliance accessories, that they should be included.

Studies of the requirements committees as well as the researches by the Testing Laboratory on this project were concerned primarily with safety both from the standpoint of the accessory itself and from the effect of its operation on the performance of the appliance to which it may be connected. In the first category were included such considerations as strength of parts, adjustment means, marking and placement of vent connections, diaphragms, linkage mechanism, and general assembly. The second principal classification involved a study of the performance characteristics of a regulator in relation to appliance operation and was a more difficult and complicated task.

Principles of satisfactory regulator performance were evolved as follows:

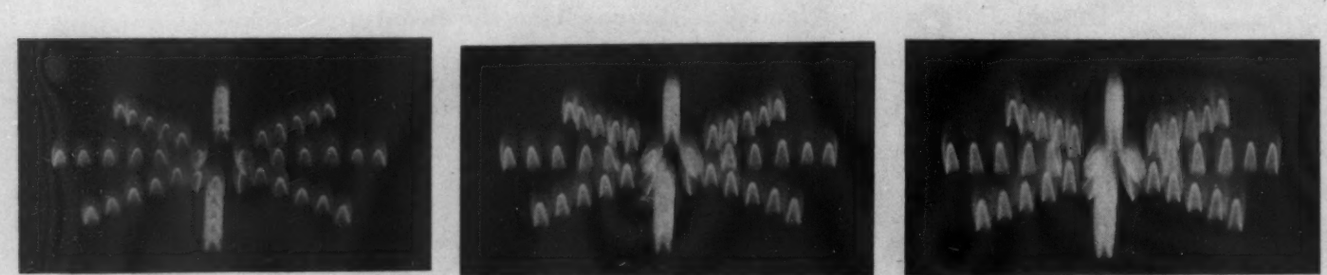
1. With predetermined adjustment conditions the adjustment outlet pressure shall remain constant within close limits when the inlet pressure is varied above and below the adjustment inlet pressure over a range of throughputs from no-flow or lock-up to the maximum rated capacity of the device.

2. With predetermined adjustment conditions, the regulator shall not offer undue resistance to a gas flow equivalent to the maximum rated capacity of the device, when the inlet pressure is decreased slightly below the adjustment outlet pressure.

As a result of appliance investigations and the study of the performance of 69 domestic gas pressure regulators, the essential adjustment conditions and variable limits were established in line with the principles stated above. Adjustment inlet and outlet pressures were set at 7.0 and 2.5 inches of water respectively. The range of inlet pressures considered as reasonable variations with which a regulator should effectively cope was selected at from 3.5 to 10.5 inches of water. It was further decided that outlet pressure should not vary from the adjustment pressure by more than 0.5 inch of water over the range of test conditions imposed. It was also deemed essential that the pressure drop through the regulator should not exceed 0.3 inch of water when the valve is opened by lowering the inlet pressure 0.5 inch of water below the adjustment outlet pressure and the maximum gas capacity is being passed.

The one remaining variable to be selected was the adjustment throughput rate. That finally chosen varied from 10 cubic feet of 0.6 specific gravity gas for ¼-inch size regulators to 1,000 cubic feet of 0.6 specific gravity gas for a 3-inch regulator. The throughputs, it is believed, generally satisfy two important concepts in that they lie beyond the range of unstable regulator operation and, with exception of pilot rates, they are a reasonable approximation of the average lowest input, including turndown rates, to appliances on which a regulator of given size may be installed.

During the course of the Laboratory's investigation, a series of performance curves were secured for the regulators studied. The data for these outlet pressure-throughput curves were obtained by first adjusting the regulator so as to pass the assigned adjustment



0.5 Normal Pressure — Normal Pressure — 1.25 Normal Pressure

FIG. 1. EFFECT OF PRESSURE ON HEIGHT OF FLAME.

Southern California Gas Company features water heaters with tanks of non-rust EVERDUR

Displays identical to the one shown above have been placed in the windows of ten offices of Southern California Gas Company. Officials of this progressive company know that Everdur tanks, because they cannot rust, offer the public *better value,* that they benefit the company in reduced servicing expense, increased good-will and steady consumption of gas. For these reasons, the advantages of owning an Everdur tank are being stressed in the water heating campaign now being conducted by Southern California Gas Company, Southern Counties Gas Company, and Los Angeles Gas and Electric Corporation.

Everdur is a copper-silicon alloy with the strength of medium carbon steel. Its ductility enables it to withstand the most punishing tests. Practically all manufacturers of automatic gas water heaters have standardized on Everdur Metal for storage tanks of non-rust models. 3596

ANACONDA
from mine to consumer

THE AMERICAN BRASS CO.
General Offices: Waterbury, Connecticut

EVERDUR METAL *for* TANKS

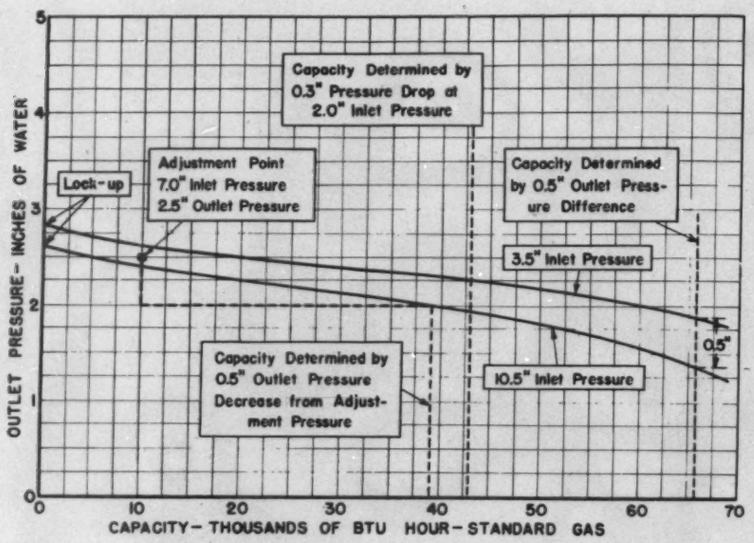


FIG. 2.

throughput at 7 inches inlet pressure and 2.5 inches outlet pressure (if obtainable). This regulator adjustment was then left unchanged for all subsequent tests. With the inlet pressure elevated to and maintained at 10.5 inches of water the throughput was varied in increments, the outlet pressure being observed at each throughput. Similarly, data were obtained with an inlet pressure of 3.5 inches of water. Curves were then drawn through these two sets of data (Fig. 2). In addition, the capacity of the valve with an inlet pressure of 2 inches of water, or 0.5 inch below the outlet adjustment pressure, was determined at a pressure drop of 0.3 inch of water.

Long Term Sales Accounting Practice

● MARTIN J. COUGHLIN, Assistant Secretary, Hartford (Conn.) Gas Co.; addressing the New England Gas Association.—(Abstract by WESTERN GAS).

IN 1930, when purchasing power declined sharply, the Hartford (Conn.) Gas Co. inaugurated its 5-year purchase plan to meet the condidition. Commercial and industrial sales also dropped off. This meant concentrated selling in the domestic field, and rate reductions alone would not suffice to show a gain here. It became necessary to permit appliance purchase from relatively smaller incomes, which meant an extension of the payment period and smaller installments. For some companies the extended payment plan did not help materially and the rental idea was conceived.

Those in the utility business know that the average customer is an ideal credit risk as a purchaser of domestic appliances. The advent of longer terms and smaller installments gave impetus to sales replacing obsolete gas appliances, and competitive fuels were frequently eliminated. In the period 1931 to 1935, the Hartford Gas Co. sold more appliances, both in volume and dollar value, than in the same period of years immediately preceding. Not all of these were under long terms.

During this period merchandise accounts receivable increased over 600 per cent, and recent analysis showed that only 7 per cent of the total were delinquent. Accounts on which installments were 90 days in arrears were considered delinquent.

In some instances companies are not able to carry this long term paper and short term loans have been required. Bank credit is not suited to this type of financing and it should be left to installment banking concerns.

For each type of plan, adopted to meet situations found in particular localities, there must be a definite financing program and the accounting department should have the authority to issue instructions for proper procedure. Accounting procedure involved in use of the three general types of plans may be summarized as follows:

Rental Plan:

Under this plan there is the cost of appliance or appliances plus cost of installation constituting the cost of rental appliance to be set up as a capital account. The resultant depreciation charges should be equivalent to the rental income for a period agreed upon. The rentals to be credited to rental of gas appliances.

Rental Purchase Plan:

This type of financing carries the option to purchase the appliance under specified conditions within certain limits. Usually part of the rentals are credited to the purchaser's account. The accounting procedure in this instance is one of company policy, depending on plan of rental purchase.

Take as an example a plan of rental to purchase conversion within a period of one year, with an allowance of rentals paid equivalent to 100 per cent for one year and 75 per cent thereafter, rentals of $2 per month, and cash purchase price $100.

Billing, money and uncollectable costs amount to	$ 32
Time price	$132
Rentals paid	$ 24

Then the rental is converted to sale. The time price would hold, and payments continue for a period applicable to sales. But if rental payments were to continue, the accounting procedure might then be to have the purchaser sign a regular sales contract. The Hartford plan discounts this transaction at 75 per cent of balance after 1 year rental payments.

Time price	$132
Rentals	$ 24
Balance.....$108 discounted at 75 per cent	
Total rental cost	$168

This amount is accepted as an account receivable, crediting merchandise and jobbing revenue with $132, and an appropriate suspense account with $36. Then when installments have been paid, suspense is debited, merchandise and jobbing revenue is credited. At the expiration of 7 years the purchaser or renter may be given title to appliance.

Long Term Sales:

Use of this plan depends upon the cash position of the operating company. The long term financing runs usually from 30 to 60 months. If there should be some selling for payment in a shorter period, and net sales of merchandise and jobbing department average slightly more than before, (through offering of extended pyaments) about 48 months will have elapsed before collections will have equalled sales. Thus the collection departments must be diligent in following the accounts.

The accounting procedure in this case is one of accounts receivable merchandise, dr., operating revenue merchandise, cr., miscellaneous interest income, cr.

As this is a financing really outside the domain of merchandising department, value of contracts should not be included in that department's revenue. If included, then a fictitious revenue account is built up and selling costs show improvement. The value of contract becomes accounts receivable, and cash and interest account credited.

There seems to be a trend to finance sales through "time payment bankers" the utility acting as collection agent only. This method is in use where the utility has no merchandising activities. Under this system the payment is billed by the utility together with service bill and accounting made to finance company.

That's the Reason . . .

Porcelain Enamel is *FLINT-HARD*

It is the 1550°F.—the white hot heat that would quickly destroy anything organic — that makes porcelain enamel as "hard as flint." But being inorganic (a mineral substance) porcelain enamel is fused right onto its base metal by this intense heat—made to become almost an integral part of the metal itself.

And that's not only why porcelain enamel is as hard as the steel it finishes—but why it is the ideal, lifetime finish for so many household appliances.

When you have sold an appliance that is finished in porcelain enamel, you can rest assured the finish will be there as long as your customer lives—spotlessly clean and exactly the same as the day you wrote up the sales order.

Feature the porcelain enamel finish on your appliances. It will help you sell the higher-priced, longer-profit units. Porcelain enamel will return you longer profits not only with the first sale but all other sales that come through satisfied customers.

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PORCELAIN ENAMEL INSTITUTE, Inc.
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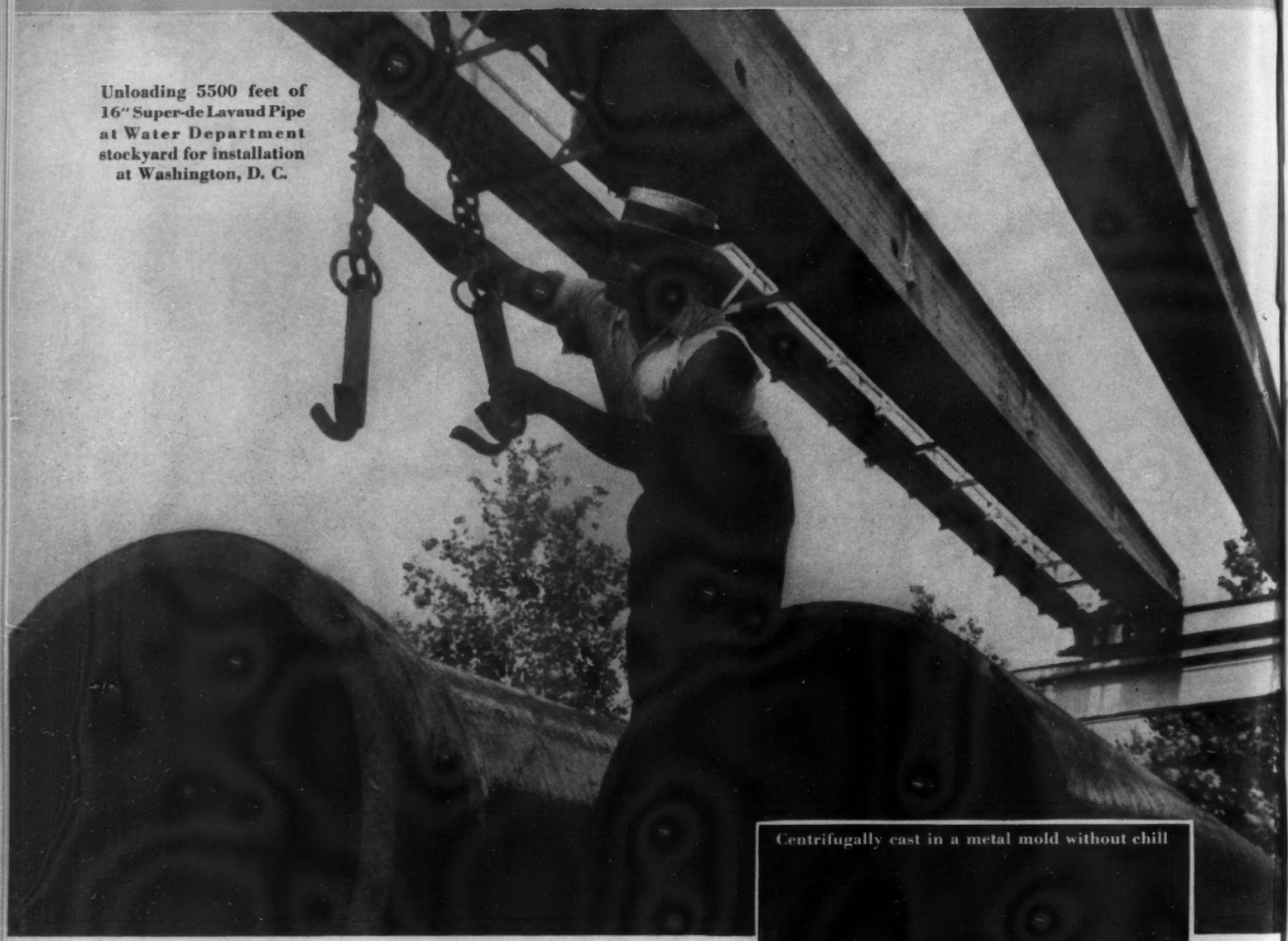
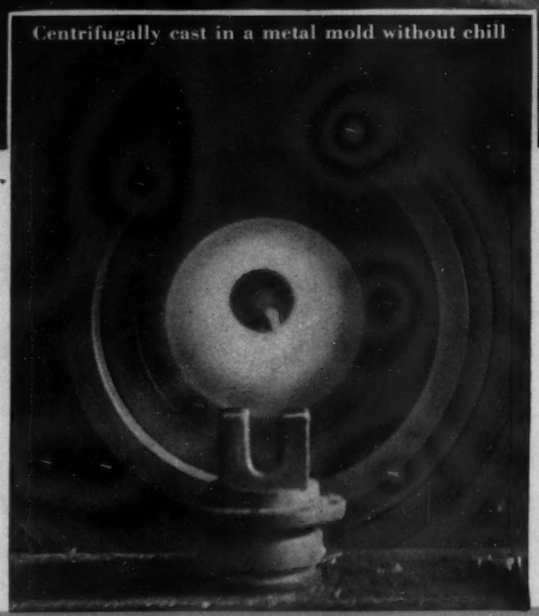
PORCELAIN ENAMEL *THE Lifetime Finish*

IMPACT RESISTANCE DOUBLED!



Unloading 5500 feet of 16" Super-de Lavaud Pipe at Water Department stockyard for installation at Washington, D. C.



Centrifugally cast in a metal mold without chill

THE full span of a cast iron water main's useful life is yet to be measured: witness the fact that the first recorded installation of cast iron water pipe is still in use after nearly three centuries of service. Certain it is that Super-de Lavaud centrifugally-cast pipe with its notably improved metal structure will more than live up to cast iron's unique reputation for long life. This is a *stronger, tougher, more ductile* cast iron pipe, made so by a patented and proved process in which gray iron is centrifugally-cast in a metal mold *without chill.* Impact resistance is *doubled* without lowering tensile or bursting strength. Send for descriptive brochure.

U.S. SUPER-de LAVAUD PIPE

CAST WITHOUT CHILL IN A METAL MOLD

UNITED STATES PIPE AND FOUNDRY CO., General Office: BURLINGTON, N. J.

Foundries and Sales Offices throughout the United States

For this service the utility is reimbursed at so much per bill rendered. If payment is not made within an agreed time, the account is returned to finance company and the utility assumes no liability.

Yet another plan under which long term financing may be done is the discounting of accounts receivable with long term bankers. Under this method the utility retains control of the account, doing the collecting and adjusting at its own expense and making payment to financing agent. Then this becomes a contingent liability reduced by payments made. This form is about as follows:

Cash installed price	.....
Less down payment	.....
Added finance charges	.....
Total time price	.....
Less down payment	.....
Unpaid balance	.....
Per cent accepted by finance co.	.....
Less discount charge	.....
Cash immediately available is	.....
The down payments plus payment from finance company	.....

After finance company has been paid in full, there should accrue to the utility approximately 7 per cent more which allows 3 per cent for bad accounts.

Chicago Convention

(Continued from Page 19)

Corp., Pittsburgh, will lead the second discussion, which will be participated in by a number of other speakers, including Frank C. Smith, Houston Natural Gas Co., Houston, Texas; Paul R. Johnson, Union Gas Co., Independence, Kan.; and Henry O. Loebell, Natural Gas Pipe Line Co. of America, Chicago.

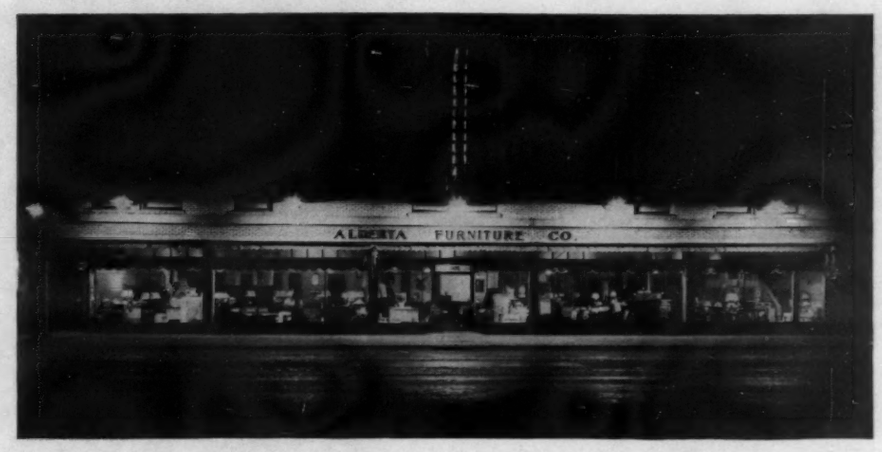
At 6:30 p.m. the Executive, Managing and Advisory Committees of the Natural Gas Department will hold their annual meeting and dinner.

Prominent on the October 14-17 program will be the subject of national advertising for gas. At the luncheon session of the Publicity and Advertising Committee, Thursday afternoon, it is planned to discuss radio broadcasting in behalf of gas cooking, with respect to use of a nationally sponsored "live" broadcast featuring a well-known expert and supplemented by electrical transcription records to be used by companies outside the area of the large network stations. Proposals for a general program of national prestige-building advertising will also be considered.

Accounting, Industrial Gas, and Technical Sections all have full programs set up, which will bring specialized value to those engaged in these fields. At its meeting the Manufacturers' Section will provide its members an opportunity to vote upon organization of the proposed Association of Gas Appliance and Equipment Manufacturers.

Penn Electric New Research Chief

Burton E. Shaw. formerly consulting engineer for Gilbert & Barker Manufacturing Co., became chief of the research department of the Penn Electric Switch Co., Des Moines, Iowa, on August 1, according to Albert Penn, president of the company. Mr. Shaw has had varied experience in the heating, refrigerating and air conditioning fields.



Night view of the Alberta Furniture Co. store at Portland, Ore., illuminated by six 3,000 candle power super charged Humphrey gas lamps.

Practical Aspects of Gas Flood Lighting

● W. M. BLINKS, General Gas Light Co., Kalamazoo, Mich.; addressing Mid-West Gas Association 1935 Annual Convention. (Abstract by WESTERN GAS)

FLOOD lighting as ordinarily understood is really spot lighting on a large scale. A large volume of light is projected in one direction from sources concealed as far as possible. When the high-power gas lamp appeared it flooded its surroundings with an abundance of light, and someone called it "flood light." Hence there are two radically different systems called by the same name, and the gas man will be well advised to stress the latter meaning and usage of "flooding," for which gas is particularly applicable.

The super candle power gas lamp takes gas at ordinary main pressure, minimum 3 inches for manufactured gas, and 5 inches for natural gas, and with an electrically operated super charger, delivers air under pressure so as to obtain a premixture for intense combustion. A recently patented process gives a large mantle that becomes highly incandescent under this high temperature activation. Provision is made for igniting and extinguishing of the flame under choked mixture which avoids the explosive effect that otherwise occurs. As the operation is entirely controlled through the electrically motored super charger, control through the wiring is obtained at any desired location.

Gas consumption is about 35,000 B.t.u. per hour; electric, 50 watts. Average lower hemispherical candle power is 3,000 or 18,840 lumens.

In selecting outdoor lighting service as offering greatest opportunity for attracting attention the weather factor must be reckoned with. In introducing the lamp every effort was made to point out the ordinary hazards of condensation and frost in the use of moist gas. Those lamp users who took the precautions that experience had shown to be required, had little trouble.

Electric ignition is being substituted for flame pilots on all new natural gas lamps. This ignition is wired in to the super charger motor current and the lighting coil glows almost instantly after the main lamp switch has been moved. A thermostat soon cuts out the igniter and contact is not again established until the lamp cools. While this will require the usual care attending the use of all thermostatic devices, it is felt that the chief problem in the lamp's use on natural gas has been solved.

Last winter's experience has shown that the cold that causes trouble with manufactured gas may be made to overcome trouble. In other words, by exposing moist gas to cold in pipe of sufficient size to permit condensation and frost to collect upon the inside wall and still leave opening enough for gas passage, required de-humidification is obtained.

It has been largely a matter of trial and error in finding out how much condensation surface is necessary. The matter has now been worked out to the extent that a steel condenser box with inside baffle plates, and outside dimension of 10 by 22 inches by 7 inches will expose passing gas to a cold metal surface equal to that of 47 feet of 1½-inch pipe. A condenser may be put on an outside wall in some inconspicuous place and after de-humidification, the gas brought back inside for piping to lamp locations.

There will be some globe breakage—a penalty that is paid for high power re-

CHARLES E. ANDERSON (left), owner of Alberta Furniture Co., having features of the Humphrey gas lamp pointed out to him by B. H. PARKINSON, commercial manager of the Portland Gas & Coke Co.

sults, be the source either gas or electricity. The district manager of one of the large oil companies, having many service stations under his charge, states that most hard rains take their toll of high wattage lamps, and considers 60 days the average life of a 1,000-watt bulb in outdoor service, the cost of this size bulb being nearly the same as that of a high-power gas globe.

The original recommendation that the downtown office be the gas company's first test point for high power lighting, probably should be modified. There is a technique to be learned, both in the installation and maintenance of the lamps, and the extra expense of fitting lamps at a shop, warehouse, or plant location would seem to be warranted, even if it is intended to eventually use them at the main office. Most of the reports by the manufacturers' service men have indicated that preliminary study of condensation piping, as well as of lamp adjustment and maintenance, in the freedom and quiet of a less conspicuous place than the downtown office front would have helped greatly.

Directional reflectors and concentrating shades will come in time and extend the range of high power gas lamp application.

The super candle power gas lamp when located at a shade height from 13 to 15 feet above ground level not only brightly floods a building with a soft light, but also spreads its rays over a large area, attracting attention several blocks away. Several bracket lamps on the walls of a gasoline filling station, for example, are easy to install and are a revelation in business attracting illumination. It is not necessary to put in the usual corner directional lights and a few electric lamps at the pump signs and in the pits will be wanted anyway. Lacking a range of gas lighting units, sharing the job is the satisfactory procedure.

As to costs, there will be some advantage on the gas side, but when all investment and servicing has been figured, we must not base our appeal too confidently on price alone. The head of a nationally known sales promotion organization studied super candle power gas lighting for a large holding corporation and reported: "A properly trained salesman can sell this specialty on its merits and not depend upon price or operating cost as his major appeal."

Gas lighting offers low intensity, large source area, as contrasted with the high intensity filament source. The ratio is 252 candles per square inch for the mantle, against 7,000 candles per square inch for the filament. The human eye at a reasonable distance pleasantly accepts the lower unshaded source, where it is blinded by the bare high intensity source.

The super charged combustion principal is now being worked out with smaller units for indoor use. This is a promising prospect that is the direct offshoot of the high power outdoor lamp.

The heat by-product of indoor lighting may yet become an asset in extending operations. In most sections, added heat is needed at night for about nine months in a year. It is not likely that gas will again be used to the entire exclusion of electricity, but a partnership is suggested, in which gas will furnish not only light but a money-saving amount of heat during the period it is needed, and electric service be used when heat might be oppressive.

The final arbiter in how much gas lighting load is to be regained, is the gas company. If enough companies decide to go after lighting the required devices to produce it will be forthcoming.

P. C. G. A. Passes 42nd Milestone at Pasadena Session

(Continued from Page 18)

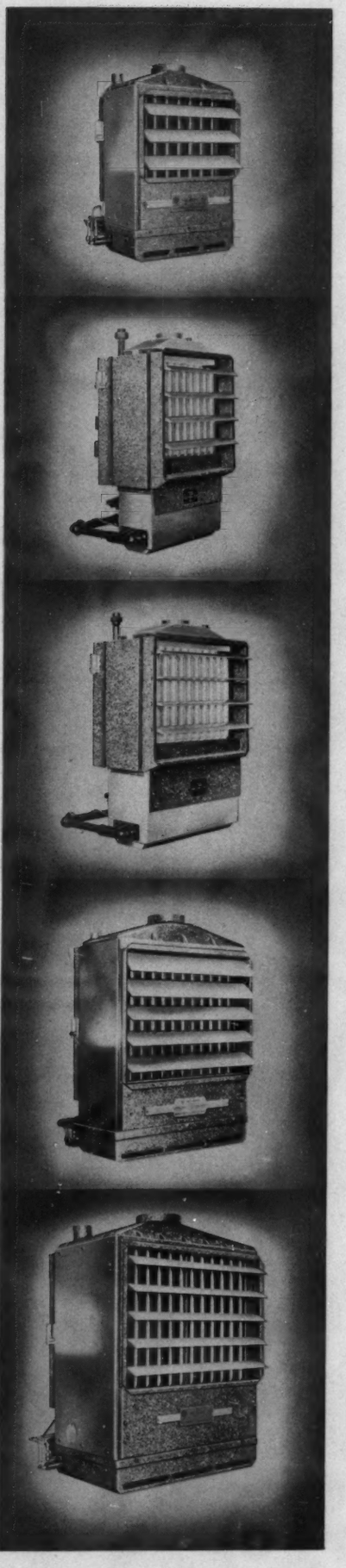
Katherine L. Rathbone, Southern Counties Gas Co., chairman of the Women's Committee, directed a conference of this group on Wednesday afternoon, featuring round table discussions on Women's Committee procedure and customer contacts of women employees. A convention exhibit of Women's Committee year books was again arranged, first prize in this exhibit being accorded to the Pacific Gas and Electric Co. Women's Committee, Miss Peggy O'Mahoney, chairman. Second prize went to the Southern Counties Gas Co. committee, Miss Nora S. Quivey, chairman. The prizes were $25 and $15 respectively.

An important effort of the Public Relations Section during the past Association year, was the "What-Do-You-Know?" contest, conducted by a committee with Daniel L. Scott of Los Angeles Gas and Electric Corp. as chairman. A questionnaire was circulated through local company contest directors, and a total of 2,158 employees of member companies took part in the activity. First prize ($25) went to Thomas Bradshaw, Spokane Gas & Fuel Co.; second prize ($20) to Isabelle Betts, Southern California Gas Co.; and third prize ($15) to Robert Colony, Spokane Gas & Fuel Co. There were nine additional merit prizes of $10 each, plus 30 prizes of $5 drawn by lot.

E. L. Payne, general chairman of the Manufacturers' Section, presided over a representative group for the Section's Thursday afternoon meeting. Considerable discussion was had of the proposed formation of the national Association of Gas Appliance and Equipment Manufacturers. J. E. Kern discussed the cooperative gas exhibit at the Los Angeles Better Housing Show, and Clyde H. Potter the San Diego Exposition exhibits, with particular respect to the Casa de Tempo cooperative home in which gas was well represented; slides illustrated both of these features. F. E. Vandaveer brought the manufacturers a word on A.G.A. Laboratory research. Dr. Vandaveer also led a discussion on proposed revisions in Laboratory requirements on central house heating and space heating appliances, at a meeting Wednesday morning. The manufacturers' general meeting concluded with a report from A. F. Rice, H. R. Basford Co. who served as chairman of a committee to develop a manufacturer-utility policy structure.

Distribution of honors to Association committees took place at the annual banquet, Thursday evening, which brought the 42nd annual convention to an official close.

The Awards Committee, made up of D. L. Scott, chairman, Douglas Buckler, Guy Corfield, R. N. Dreiman, F. A. Hough, E. G. McCann, W. J. McCoy and J. W. Wrenn, awarded the Basford Trophy to the Commercial Section, of which Frank Talcott of the Pacific Gas and Electric Co. was chairman. This annual award goes to the



UTILITIES
And Their
CUSTOMERS
Benefit Mutually With SC Unit Heaters

There is a correct size and type, or combination of types, of SC Unit Heaters for any space heating requirements. They have a wide range of application and from the complete range of sizes available the customer is assured of the right equipment for his individual needs.

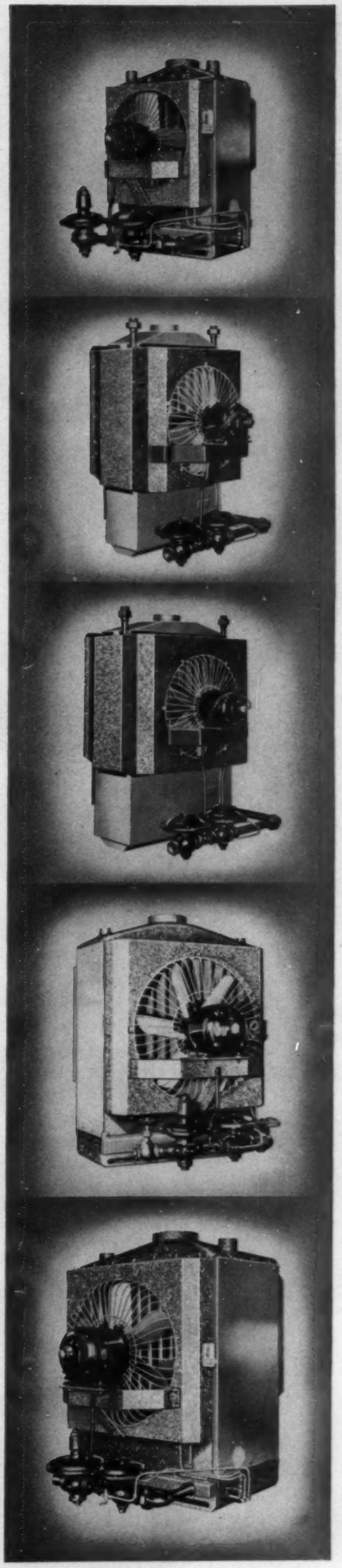
This fact, plus the efficient operation and attractive appearance is an additional advantage of SC Unit Heaters. All of this means maximum heating satisfaction to the customer.

To the Utility, satisfied customers mean profitable load and the further acceptance of gas fuel and this excellent appliance.

Let us help you further the sales of SC Unit Heaters. We offer advertising and the benefit of our experience in many heating campaigns.

SURFACE COMBUSTION CORPORATION

TOLEDO, OHIO



Section judged to have contributed most valuably to the Association program during the year.

Honorable mention was also accorded by the Awards Committee to the following reports and papers:

Committee Report: "Finding and Meeting the Customer Market for Gas", Frank C. Packer, Welsbach Co., chairman.
Committee Report: "Value of Collection and Sales Department Coordination," E. G. Stahl, San Joaquin Light & Power Corp., chairman.
Industrial Sales Committee—For series of Industrial Gas Utilization Bulletins—R. L. Grutzmacher, National Gas Equipment, Inc., chairman.
Paper: "Education and Training of Utility Employees," Guy W. Wadsworth, Southern Counties Gas Co.
Committee Report: "Pipe Protection", A. B. Allyne, Southern Counties Gas Co., chairman.
Committee Report: "Safe Gas Distribution Practice", C. A. Renz, Los Angeles Gas & Electric Corp., chairman.
Paper—"Domestic Vents and Flues and Boiler Stacks", Frank Wills, Pacific Gas and Electric Co.

The annual golf tournament, held at Annandale Country Club, brought some 60 Association golfers into play on Friday, following conclusion of convention sessions. Arrangements were in charge of W. M. Thompson of Reliance Manufacturing Co., P.C.G.A.'s perennial golf chairman, who had the assistance of J. J. Delancy of Reliance. Golf results were the following:

Low Net Prize (carrying with it custody during 1936 of the Basford-Pedersen-Babcock Trophy): W. M. Henderson.
Low Gross Prize: George H. Finley.
First Prize Class A: D. M. Hill.
Second Prize Class A: Jas. L. Stone.
First Prize Class B: W. M. Fisher.
Second Prize Class B: R. McMahon.
First Prize Class C: C. A. Swigart.
Second Prize Class C: G. L. Taylor.
Blind Bogey: Tied for by G. P. Egleston, W. H. Noble, W. I. Thrall and T. J. Wallace.

Gas Appliance Day at the Exposition was one of the most enjoyed features of Convention week, for those who were able to make the trip to San Diego. Promotion for the trip and arrangements for those attending were in charge of Ray C. Cavell of the San Diego Consolidated Gas and Electric Co. A luncheon was held at the Casa del Rey Moro cafe on the Exposition grounds, by San Diego Consolidated's Women's Committee of which Mary Hurley was chairman, honoring visiting delegates.

The "Modern School of Gas Cookery" held Saturday evening, September 21, in Ford Bowl at the Exposition is generally conceded to be one of the best pieces of publicity for gas staged on the west coast in many years. Arrangements for the school were in charge of A. T. Gray of the Los Angeles Gas and Electric Corp., with Forrest M. Raymond directing a barrage of local publicity. Posters, newspaper publicity, and distribution to children of several thousand caps bearing the words "Gas, the Modern Fuel", brought a crowd upwards of 3,000 to Ford Bowl—the largest attendance in the Bowl at any time during the Exposition. Miss Victoria Warner, home service director for Los Angeles Gas and Electric Corp., conducted the highly interesting lecture demonstration, which kept the large audience entertained for almost three hours. Merchandise prizes of more than $500 in value, including various major gas appliances, were awarded to lucky ticket holders.

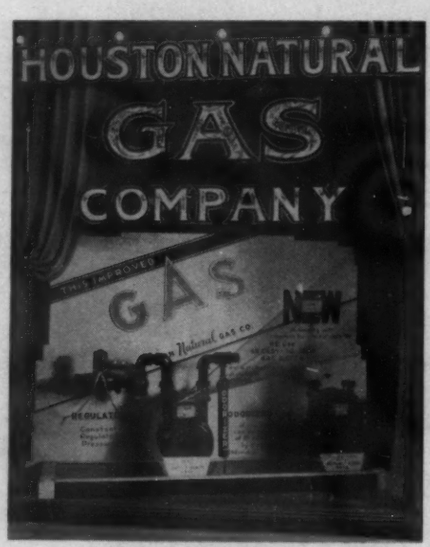
P. C. G. A. visitors at the Exposition were interested to inspect the exhibit of the Association and the joint exhibit of San Diego Consolidated and Southern Counties Gas Co.

A review of the 42nd Annual Convention would be incomplete indeed if it failed to mention the services of the Convention Committee.

General Chairman Geo. S. Campbell left no stone unturned to see that the convention was staged under ideal conditions. His efficient committee was made up of O. F. Adkins, Transportation; Ray C. Cavell, San Diego Trip; Wm. Fisher, Registration; W. M. Henderson, Reception and Attendance; Wm. Maddock, Program Manager; Otto Mauthe, Publicity; O. L. Moore, Entertainment; Clyde H. Potter, Hotel Accommodations; Geo. M. Sadler, Banquet; W. M. Thompson, Golf; Mrs. Wm. Moeller, Jr., Hostess. Mrs. Moeller was responsible for a succession of enjoyable social events for convention ladies.

Houston Natural Using Individual Odorizers

HOUSTON Natural Gas Co., Houston, Texas, for some time has had in use small odorizers which are installed on the premises of individual domestic customers upon request. One of the company's



current window displays is shown above, and the small odorizer will be noted at the right of the meter in the photograph.

The odorizer consists simply of a small container connected to the outlet side of the customer's meter by a tee, with a wick extending up through the tee into the gas stream. Odorant is purchased in tubes and is dropped into the container without discontinuing the service. Fillings of odorant are designed for an average service period of two years.

On the Houston Natural system a color scheme has been adopted for domestic meter sets, the meter and odorizer being painted red, with the regulator and piping above the meter in black.

When a new gas customer files his application for service, he decides whether or not he wishes his gas odorized, and no odorizer is installed except upon request.

Bureau of Mines Reopens Laramie, Wyo., Field Office

Reopening of the field office of the Bureau of Mines at Laramie, Wyo., to be located on the University of Wyoming campus, is announced by John W. Finch, director of the Bureau of Mines.

R. A. Cattell, chief engineer of the Petroleum and Natural Gas Division of the Bureau of Mines, headquartering in Washington, D. C., is general supervisor of the Laramie studies. In Laramie Harold P. Rue is supervising engineer, Harold M. Thorne, chemistry and refining, and Ralph H. Espach, production problems. All three men were transferred from the Bartlesville, Okla., experiment station.

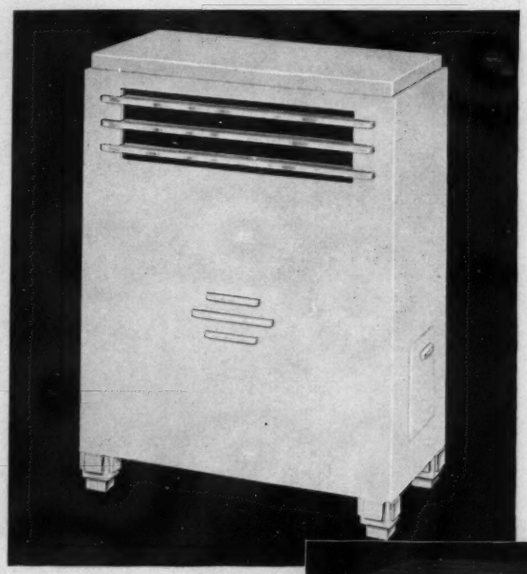
Injunctions Granted on Texas Gas Production Statute

Texoma Natural Gas Co. on September 8 secured a federal court injunction staying the action of the Texas House Bill 266, calling for ratable production of natural gas. Similar action followed by Cargray Corp. and Americal Natural Gasoline Corp., large natural gasoline operators, which reopened their Panhandle stripping plants and resumed blowing residue gas to the air. Early court tests of the Texas statute is looked for as a result of the above actions.

Council Bluffs Schools Use Gas

Out of savings to be effected by using natural gas, the board of education of Council Bluffs, Iowa, will pay for some $4,000 of gas equipment which it has authorized the Council Bluffs Gas Co. to install in the city's remaining 15 school buildings not yet equipped for using natural gas.

QUALITY THAT MAKES WARM FRIENDS EVERYWHERE



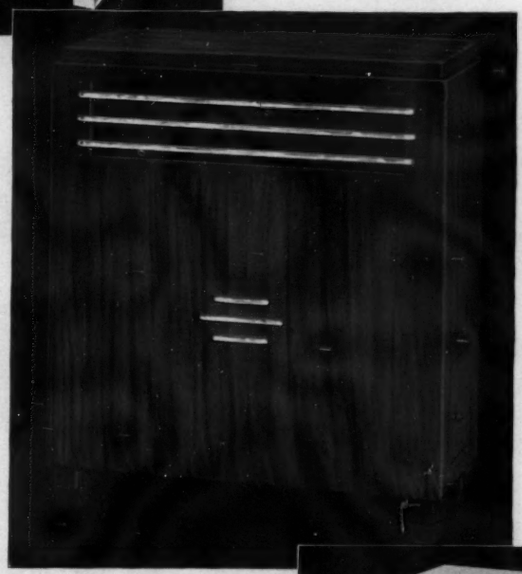
MANY gas appliance merchandisers are cashing in on circulator heating business and assuring themselves of the lasting friendship of their customers by selling PAYNE MODERN CONSOLE HEATERS.

This season, more than ever before, there is the opportunity to create good will for your company by giving the customers a product with inbuilt quality and unquestioned reputation.

Twenty-one years of experience in designing and manufacturing gas burning appliances are back of this product. Their superiority has been proved by laboratory tests and countless installations giving utmost satisfaction.

● PAYNE MODERN CONSOLE HEATERS are finished in pleasing tones of color, complemented by polished chromium in just the right proportion to add dignity and brightness desirable in any room.

Modern, but not extreme; colorful, but not gaudy, they harmonize with home furnishings and become not only a very efficient heater but an attractive piece of furniture.

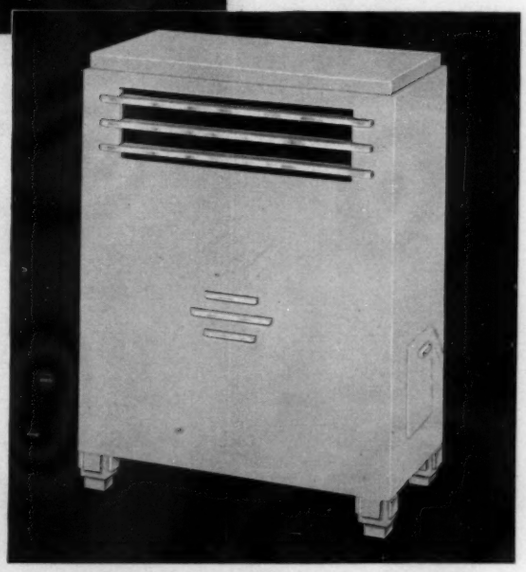


● The insulated casing of the PAYNE MODERN CONSOLE HEATER is a protection in homes with small children, and, being built closer to the floor than is usual with this type of heater, cold floors are eliminated.

Superior all-welded, gas tight heating unit construction provides for complete combustion and assurance of economic operation. There is absolutely no leakage of gas fumes into the rooms.

THE recirculation principle used in the PAYNE MODERN CONSOLE HEATER produces perfect circulation of the air without stratification. The warmed air is circulated within the area where comfort is demanded and not packed above the breathing level and up to the ceiling.

There is a range of sizes designed to meet every heating need either by single or multiple installation.

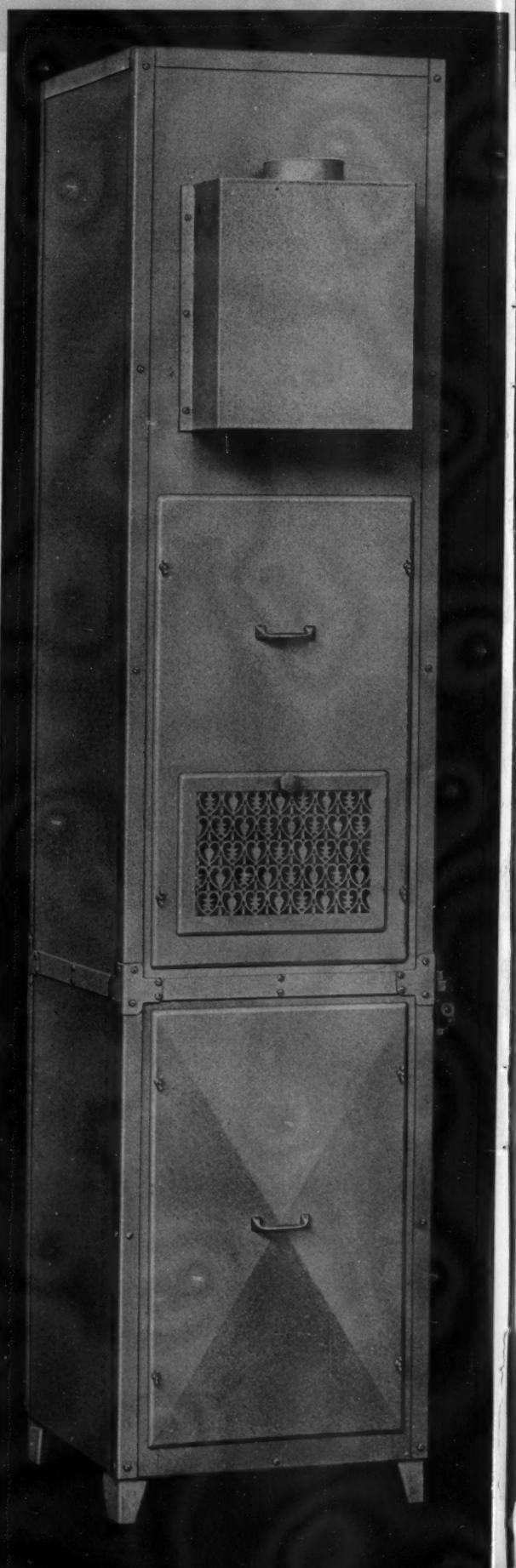


Write for descriptive literature

PAYNE FURNACE & SUPPLY COMPANY

BEVERLY HILLS, CALIFORNIA

QUICKER QUIETER CLEANER FORCED AIR HEAT



ITS principles of design and operation tested by actual installation in scores of homes, the Payne "FAU" Furnace can be presented to your customer as the most ideal method for providing year 'round comfort.

The very attractively finished casing of this Unit encloses heating element, blower, motor and all control equipment—and it occupies no more space than the average modern water heater or refrigerator. Requires no basement but is installed on service porch or in a closet.

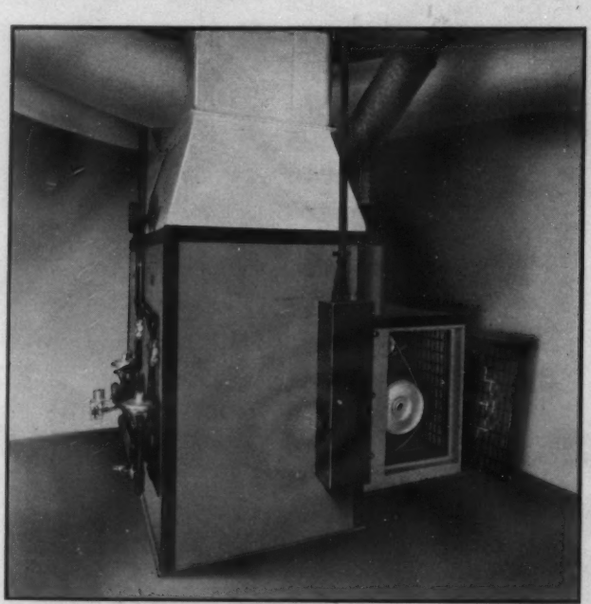
Rapid heating results, combined with quiet, efficient and economical operation, make this unit particularly to be desired by those interested in the most modern method of gas heating.

WINTER AIR CONDITIONING

THE Payne Unit Type (Series "A") Furnace is well known for its efficiency and dependability in gravity type heating installations. It is particularly adaptable for use with blower, filters and automatic humidifying equipment for complete winter air conditioning.

There will be found a big field for this type of equipment in making replacements and in modernizing out-moded central heating plants. An ideal forced air heating and winter air conditioning system for basement installation.

The illustration shows complete winter air conditioning installation in Casa Toyopa, all gas equipped home in Santa Monica, California.



Write for descriptive literature

PAYNE FURNACE & SUPPLY COMPANY

BEVERLY HILLS, CALIFORNIA

Modified Rental Plan Featured by Northern Natural's Affiliates

The Argus Pipe Line Co., Peoples Natural Gas Co., and Minnesota Northern Natural Gas Co. have adopted a modified rental plan on conversion burners in their current house heating sales campaign. This plan calls for small monthly rental payments during the first year's operation commencing with the first heating bill and ending July 1 the following year, at which time the customer may elect to retain the burner, applying the monthly rental payments as down payment and concluding purchase under the contract within an additional 25-month period.

Fully automatic burners have been priced at $95.00, and a particularly attractive offer on the special Zink hand control burners with safety pilot and upstairs chain control is featured.

The same modified rental plan has been adopted on water heaters.

Panhandle Eastern Pipe Line Signs Contract to Supply Detroit

Panhandle Eastern Pipe Line Co., Kansas City, Mo., has contracted with the Detroit City Gas Co. to supply natural gas to the latter for a period of 15 years beginning July 1, 1936. The Panhandle Eastern Pipe Line Co. is 50 per cent owned by the Columbia Oil & Gasoline Corp., a Columbia Gas & Electric Corp. subsidiary.

This contract will mean the early construction of a 300-mile pipe line to Detroit from Panhandle Eastern's main carrier running through central Indiana. Also extensive construction would be required to supplement the company's present facilities between Indiana and the Texas fields. It is understood that Detroit City Gas Co. will spend about $2,500,000 in adapting its system for natural gas distribution.

Kettleman Station to Operate at Higher Pressures

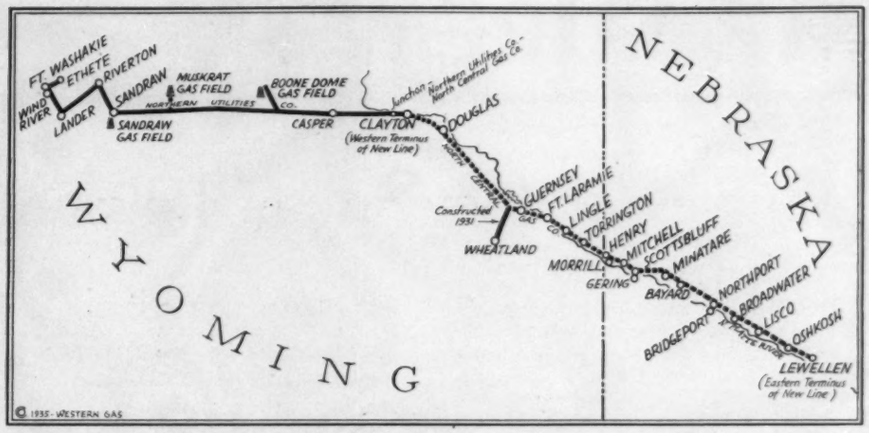
Delivery pressure from Pacific Gas and Electric Co.'s Kettleman Hills compressor station is being increased from 450 to 500 pounds, to build up sendout of the gas system supplying the Bay area. Compressor cylinders on the station's seven Cooper-Bessemer 760 h.p. engines are being replaced with new cylinders designed for the higher discharge pressures.

New Skinner Equipment Catalogue

M. B. Skinner Co., South Bend, Ind., has issued a new catalogue "Repair Clamps and Saddles for Steel and Cast Iron Pipe." The new booklet contains descriptions of equipment for ten different types of pipe line repairs and three types of service saddles, as well as the Skinner line of valve and bibb reseating and seat dressing tools. It is illustrated in two colors showing clearly the construction and application of the products.

Oregon Appliance Society Campaign

Gas Appliance Society of Oregon launched its fifth gas range campaign September 16 to run until November 2, during which period it will drive at a 1,000 range mark. A cooperative advertising program is a feature of the campaign.



Map showing line under construction by North Central Gas Co., and system of Northern Utilities Co., which supplies gas to North Central.

North Central Gas Co. Constructing 217-Mile Line

CONSTRUCTION is under way on North Central Gas Co.'s 217-mile pipe line from Clayton, Wyo., to Lewellen, Neb., according to information supplied to *Western Gas* by J. M. McIntire, vice-president. The new line will carry natural gas to the towns of Douglas, Wheatland, Guernsey, Fort Laramie, Lingle and Torrington, Wyo., and to Henry, Morrill, Mitchell, Scottsbluff, Gering, Minatare, Bayard, Bridgeport, Northport, Broadwater, Lisco, Oshkosh and Lewellen, Neb. These towns were piped in 1931 and since then have been supplied by the Stanolind Pipe Line Co. under lease to North Central Gas Co. The accompanying map shows the pipe line route.

The line will consist of 65 miles of 12-inch pipe, 56 miles of 10-inch, 9 miles of 8-inch, 18 miles of 6-inch, 24 miles of 3-inch and 45 miles of 2-inch. Approximately 35 miles of 10-inch and 18 miles of 6-inch reconditioned pipe will be used and the balance of the line will be constructed of new pipe. It is a composite line, two 40-foot joints being electrically welded and Dresser couplings being used at 80-foot intervals.

Automatic Water Heating Promotion Under Way

IN THE territory of the three gas companies headquartering at Los Angeles, Calif., a six-weeks activity on automatic water heater sales was inaugurated on September 16. Branded as "The Silver Rush" campaign, this effort has been tied into the long-term dealer-cooperative sales program of the three companies, and will put unusual force behind water heater sales in an 800,000 meter area.

Dealer contracts on automatic water heaters are purchased by the gas companies under conditions outlined in *Western Gas* for April 1935, with the additional inducement for the current campaign that no down payments need be made. Sales are limited to home owners for this campaign. Where gas water heaters replace competitive fuel heaters a charge not to exceed $7.50 of the installed price or $15.00 of the uninstalled price may be added to the contract, when necessary to cover costs of vent, and extensions for hot and cold water and gas lines.

Cooperating dealers are being refunded one-third of their expenditures on advertising devoted to eligible water heaters, copy and other details being subject to gas company approval. When Everdur tanks are advertised one-half of the dealer's expenditure is refunded. Extensive supporting advertising including billboards, counter and truck cards, etc., and newspaper space is being conducted by the companies.

Prize awards of silverware sets are at stake for a long list of dealer salesmen, with additional high-men prizes in cash (silver). Sales accomplishment is evaluated for the "Silver Rush" in terms of "feet of tunnel"; galvanized tank automatic water heaters are rated at 1 foot of tunnel for each gallon capacity, Everdur tank automatics at 2 feet of tunnel per gallon capacity, and instantaneous water heaters at 15 feet of tunnel for each gallon per minute capacity. Every dealer salesman making 300 feet of tunnel but not winning the major awards, will have a choice of other individual silver prizes. In some cases suitable similar prize offerings are made to company salesmen and dealer contact representatives, and also to general employees for sales prospects submitted.

Heaters to qualify for the campaign must be A.G.A. approved, have a published retail sales price of not less than $50 installed or $42.50 uninstalled, and must be equipped with safety pilot. Installation must conform to all local regulations and must be approved by a representative of the gas company serving. Only new equipment, sold for domestic use, is included.

San Diego Central Furnace Sales Up

San Diego (Calif.) Consolidated Gas & Electric Co. records of central heating furnace sales show that about 130 gas-fired warm-air installations have been completed as against 10 utilizing competitive fuels, for the first 8 months of 1935. For all of 1934 there were 79 gas-fired installations.

MEASUREMENT and CONTROL

Survey of Metering of Pulsating Flows of Gas

By HOWARD S. BEAN

Physicist, National Bureau of Standards
U. S. Department of Commerce*

EVER since head meters, such as the orifice, venturi tube and pitot tube, began to be used in the commercial measurement of rates of fluid flow the difficulties caused by pulsations in the fluid stream have been recognized. Naturally this subject has received a great deal of attention. In most cases this attention has not been an extensive and comprehensive study, but rather has consisted of observations on particular phases of the general problem, carried out by widely scattered observers as their time and facilities permitted. As is usual in such cases the results of the observations have been widely divergent and the conclusions drawn have, in some cases, been contradictory.

H. S. Bean

In 1931 the Gas Measurement Committee, Natural Gas Department, A. G. A., had a survey made of the status of the problem of measuring pulsating gas flows. This survey included a review of the literature on the subject, and correspondence and interviews with men who had had extensive experience in measuring the rate of flow of gas in pipe systems in which there were known possible sources of pulsation. A few were interviewed who specialize in acoustical problems and noise elimination. The results of this survey are here briefly presented, with occasional comment or explanation. At the conclusion some suggestions are offered as to the particular phases of the problem which might be made the subject of future study by anyone who has the interest and facilities.

Literature

Contrary to the usual custom, the literature on the subject is listed at the first for two reasons: First, the review of this literature was an important part of the survey; and, second, frequent reference will be made to some of it.

"Effects of Pulsation on Flow of Gases", by Prof. Horace Judd and Donal B. Pheley, in Transactions, A. S. M. E., Vol. 44, 1922, p. 853, No. 1869.

"The Laws of Similarity for Orifice and Nozzle Flows", by John L. Hodgson, in Proceedings of the A. S. M. E., 1928, FSP-51-42.

"Optional Factors in Orifice Flow", by H. W. Swift, in the London, Edinburgh and Dublin Philosophical Magazine and Journal of Science, Seventh Series, Vol. 5, January, 1928.

"Abnormal Coefficients of the Venturi Meter", by Prof. Arnold H. Gibson in Minutes of Proceedings of the Institution of Civil Engineers (London), Vol. CXCIX, 1914-15, Part I.

"Integration and Pulsation Errors in Measurement of Quantities of Gas Flowing Through an Orifice", by D. Gilmore, Jol. Inst. of Pet. Engineers (Lodon), Vol. 19, 1933, p. 25.

"Eliminating Pulsation Errors in Orifice Meter Measurement", by T. K. M. Smith, *Western Gas,* January, 1932.

"Notes on Wave Motion", by C. W. Frick for General Electric Company's Electrical Course, Eighth Semester, December, 1930.

Unpublished mathematical analyses of pulsating gas flows, by Ed. S. Smith, Hydraulic Engineer., Builders Iron Foundry Co., Providence, R. I., and E. D. Haigler, Research Engineer, Dupont Chemical Works, Belle, W. Va.

What Is Pulsating Flow?

Most engineers familiar with fluid measurements, and particularly gas measurement, have a rather indefinite idea concerning what constitutes pulsating flow, and to obtain a satisfactory definition of pulsating flow appears to be a difficult problem. Judd and Pheley state: "Pulsations . . . consist of sudden changes both in the velocity and pressure of the fluid". Gilmore defines several types ranging from what he terms "regular" (i. e., steady) flow to rapidly vibrating or *pulsating* flow. He states that in "Rapidly vibrating or pulsating flow . . . the rate of change (of one or both variables h and p) *is too fast* to permit the recording mechanism to record the true values of the variables, *due to the high inertia* of the recorder . . ."

It is to be noted that both of these definitions are relative. Indeed, no definition or statement on pulsating flow has been found which gives a definite minimum limit to the *rate of change* of the pressures or velocity (i. e., to the *frequency* of the pressure and/or velocity changes) above which the flow is pulsating and below which the flow might be termed vibrating or surging. This is possibly to be accounted for by the fact that apparently no two installations behave the same. Gilmore states that there are no fixed lines of demarcation between the several classification of flow which he gives, but that each operator must group his meters according to the time scale of the meter and degree of inertia of the meter. Thus he indicates that in order to decide whether a particular flow is pulsating it is not only necessary to consider the rate of change of the flow variables, but also the characteristics of the measuring or recording instrument.

Causes of Pulsations

Insofar as gas lines are concerned the sources of pulsation that have been reported are, in order of apparent importance:

1. Reciprocating compressors, engines or impeller type boosters;
2. Liquid, water or oil condensates, in the line;
3. Pressure regulators and worn valves;
4. Intermitters on wells and automatic drips.

Detecting the Presence of Pulsations

Various instruments and devices have been constructed or adapted by different investigators to serve as pulsometers or pulsation detectors. A very simple pulsation detector which has been used in a few cases is illustrated in Fig. 1. With the by-pass valve open the pressure in the small cylinder is brought to the average line pressure. The by-pass valve is then closed and any pulsations present in the line will cause a drop of water to oscillate.

T. K. M. Smith[1], constructed a simple but effective pulsation detector, which he called a "wigglegraph", by replacing the mercury and float of an old Ballard-Wescott gauge with a very thin metal diaphragm clamped between the two sections of the mercury pot. By speeding up the chart to about two revolutions a minute, he obtained a very instructive figure of the wave form. Unfortunately it was not possible to calibrate this particular instrument, but it would seem that by

*Publication approved by the Director of the National Bureau of Standards of the U. S. Department of Commerce.

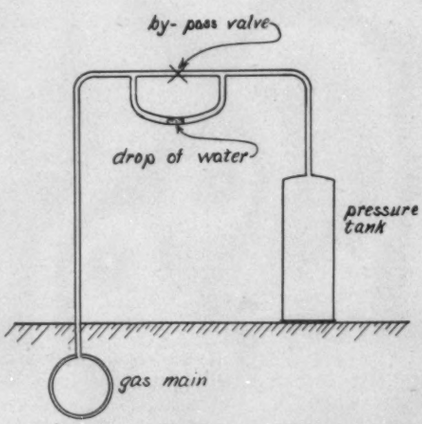


Fig. 1. A very simple type of pulsation detector.

suitable modifications a pulsometer could be constructed along these lines at relatively little cost, which could be calibrated and would be well adapted to field use.

Messrs. Judd and Pheley used a photo-pulsometer loaned by the Cutler-Hammer Co. Whether that instrument could be and was calibrated to permit reading the amplitude of the waves is not stated in the account of their work. The General Electric Co. has developed equipment to be used with its oscillographs by which either visual or photographic views of pulsation (pressure) waves may be had. It is possible to calibrate this equipment so that the amplitude and frequency of the wave may be determined. Obviously, with any such instrument the focus and the rate of film travel must be so adjusted as to produce a clear sharp line if the record is to be of any use analytically.

Some Elements and Effects of Pulsating Flows

After stating that pulsations consist of sudden changes in both the velocity and pressure of the fluid, Judd and Pheley went on to say that "The pressure change is the most apparent and is probably the chief source of error." They report that pressure changes resemble low frequency sound waves which travel with approximately the velocity of sound regardless of the velocity or quantity of fluid flowing.

Mr. Hodgson and some others contend that the velocity variation is the real cause of errors in the measurement of pulsating flows. In this connection many observers have noted "phantom" readings of flow meters on dead-ended lines, i. e., lines in which the net flow and therefore average velocity is zero. Moreover, the indicating mechanism of a flow meter measures pressures primarily, and variations in these pressures, regardless of their cause may be regarded as the effective source of error.

As a result of inertia and friction, a differential indicator is not able to follow rapid variations. It, therefore, tends to assume a position corresponding to the arithmetic mean of the successive instantaneous values of the differential head, h. For a regular cyclic fluctuation, this arithmetic mean head, h_{ar}, is a steady value given by the expression[2]

$$h_{ar} = \frac{\Sigma_0^t h}{t} = \frac{1}{t}\int_0^t h\,dt$$

To obtain the *actual* flow from the flow meter equation, the quantity needed is the square mean root value of the head, h_{smr}, which is obtained by the relations

$$\frac{1}{t}\Sigma_0^t \sqrt{h} = \sqrt{h_{smr}}, \text{ or}$$

$$h_{smr} = \left(\frac{1}{t}\int_0^t \sqrt{h}\,dt\right)^2$$

Therefore the ratio of the indicated to the actual rate of flow is given by

$$R = \sqrt{\frac{h_{ar}}{h_{smr}}}$$

As may be found from calculations for various assumed wave forms, this ratio is either equal to or greater than 1.000. Variations of the static pressure, in the case of gases, may be treated in a similar manner.

From the above it would appear that erros from pulsation will always be positive, i.e., the meter will read more than it should. This agrees in general with the experience of most observers, although negative errors have been reported. In the majority of cases the magnitude of the error probably ranges from an insignificant amount to 50 or 60 per cent, while in extreme cases the error may amount to several hundred per cent.

The indications of some displacement meters may also be affected by pulsations, as indicated by the following experience reported by D. A. Sillers[3] and R. L. Roundtree[4]:

A large high pressure displacement meter was connected into the discharge line from a compressor. Downstream from the meter there was a valve followed by a flow prover. A pressure drop of over 50 per cent was maintained across the valve so that the flow prover would be free of pulsation effects. During a series of tests the displacement meter gave erroneous readings, being high in all cases, sometimes as much as 15 per cent. The amount of error appeared to have no relation whatever to the operating conditions. During the tests it was observed that the large test hand of the displacement meter index moved in a jerky manner, and there was a clattering noise from within the meter. To determine the cause of this, the index plate of the meter was removed, and protected with a felt gasket, a piece of plate glass was held over the opening, thus permitting the operation of the meter to be observed. (The line pressure was reduced to about 5 lbs. gauge in this case.) The valves were observed to jump up and down on their seats, thus accounting for the clattering noise, and the diaphragms were seen to move in a jerky manner. These erratic movements came in cycles.

Another effect of pulsation is the loss of efficiency in compressor stations, and although not directly a part of a measurement problem, it may well be mentioned at this time. One observer[5] has noted that in a station where several compressors are operating the effects of pulsations from the other machines upon any one is to build up an excessive pressure in the line from the cylinder to discharge manifold. Also, an abnormally decreased suction pressure may be found between the inlet header and cylinder. The combined effects of these pressure variations is to cause a loss of 10 to 15 per cent of the indicated power developed in the cylinder. In other words, one out of every seven or eight compressors in some stations is operating to overcome the losses, due to pulsation, in the lines between the compressor cylinders and headers.

It was found that by shortening these lines and making them larger, the over-all efficiency of such a station was much improved. Another engineer has suggested that probably both compressor station efficiencies and metering conditions could be improved by attaching to each compressor discharge either a shell-type after-cooler, or a Burgess type muffler of long section. It has been suggested that this particular subject might well be called to the attention of the compressor manufacturers, and that they be asked to cooperate in a study of these losses with the object of improving the over-all efficiencies of compressor stations thus affected.

What May Be Done About Measuring Pulsating Flows

Many attempts have been made to determine correction factors to be used to compensate for the effects of pulsations on flow meter indications. In this connection Gilmore advises that attempts to "rate" the meter, when measuring pulsating flows should be avoided. However, for certain regular cyclic forms of pulsation he does give equations by which the error due to the pulsation may be calculated. In some cases he shows that the calculated error agrees very well with the error found by actual test.

On the basis of their work Judd and Pheley concluded that it is probably not feasible to correct any meter by means of a correction factor owing to the disturbing effects which may arise from even slight changes in the installation and running conditions. The use of the "phantom" indication of a meter on a dead-end line as a correction factor was tried and proved unreliable. The indication of such a meter varies with length of dead end and the frequency of the pulsation.

Judd and Pheley, Gilmore and Hodgson agree that if a fluid stream, subject to pulsations of more or less irregular character, is to be metered (with a head type meter) without undue error, the pulsations must be eliminated or greatly reduced. In attempting to reduce the pulsations or their effects in gas flows, many devices and methods have been tried with varying degrees of success. For convenience these may be grouped under the following headings:

1. Throttling—any abrupt change of pressure between the source of the pulsation and the meter;
2. Capacity—the introduction of as much volume as possible between the source of pulsation and the meter;
3. Neutralization of the pulsation or pressure waves;
4. Placing a muffler type section in the line between the source of pulsation and the meter;
5. Modification of the piping between the primary and secondary elements of the meter so as to obtain

(a) Geometrical equality between the two lines;

(b) To have the flow factor for each line the same for flow in either direction;

(c) The introduction of throttling or capacity in these lines.

Throttling

It is generally agreed that pulsations can be suppressed by throttling, i.e., a sudden drop in pressure. The amount of throttling needed in any given case to completely eliminate the pulsations, or to reduce them to such an extent that satisfactory measurement is possible, will depend upon the average line pressure, quantity of gas flowing, the frequency and amplitude of the pulsations, and other factors, including the particular piping layout. It has not been possible to formulate a general criterion for the amount of throttling that might be needed in any given

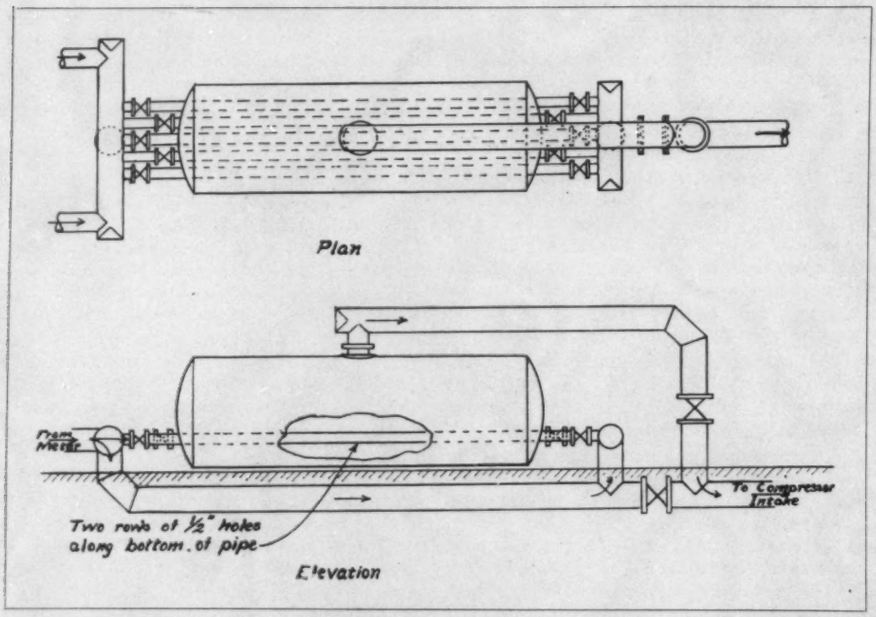


Fig. 2. Smith's pulsation tank. (If the tank were placed on the discharge of a compressor station, the gas flow through the tank would be in the opposite direction to that shown.)

case. However, it has been demonstrated that it is the relative amount of the pressure drop, and not the nature of the restriction causing it, that is the determining factor. It is well to point out that throttling involves the dissipation of pressure energy which had to be obtained from some source, usually compressors. Hence, from the standpoint of economy it is desirable to keep the amount of throttling as low as possible.

Capacity

Pulsation may be dissipated by having sufficient capacity between the pulsation source and meter location. Judd and Pheley state: "Abrupt volume enlargements in the pipe line will eliminate the error, *if of sufficient capacity* . . . A volume of relatively large diameter is more effective than one of small diameter." Other observers have noted that when a large capacity is connected to a gas line to absorb pulsations, the gas stream must actually flow through the chamber, as a capacity hung on the line does little or no good.

It is evident that for large lines, operating under high pressures, the cost of capacity chambers would be large, probably prohibitive in most cases.

Throttling and Capacity

All observers agree that the most effective and economical way of dissipating pulsations is by combining throttling and capacity. The amount of throttling and capacity needed in any given case is largely a matter of guess work or trial and error, as no satisfactory criteria are known by which they may be calculated. True, Mr. Hodgson does offer a criterion which involves the pulsation frequency, the quantity of gas flow, and the line pressure.[6] Under the usual gas line conditions in the United States these quantities are all variables, and hence for such cases his criterion is of slight practical help.

No attempt will be made to describe or enumerate all of the various devices of this type that have been tried out. It will be sufficient to briefly describe two devices that have been used successfully. The first, illustrated by Fig. 2, was designed by T. K. M. Smith. It consisted of a 4- or 5-ft. tank about 20 feet long, with four or five 4-inch pipes extending through the tank lengthwise and projecting about 3 feet beyond each end of the tank. The ends of these lines were connected to headers which were both connected to the incoming gas line. Within the tank each pipe contained two lines of ½-inch holes, spaced about 2½ inches apart, the holes in the two rows being staggered and the rows spaced so as to subtend a central angle of about 30°. The outlet was located on the mid-section of the tank and connected to the suction header of the compressors. Valves were installed on each end of the small lines leading into the tank so that the amount of throttling that could be obtained was variable. A by-pass was provided around the tank. The meter was placed some 8 feet upstream from the tank, in a 12-inch line. The average line pressure was about 17 lbs. per sq. in. It was found that a pressure drop of 1 to 2 inches of mercury was sufficient to overcome the effects of the compressor pulsation with a flow of about 23,000 M c.f. per day.

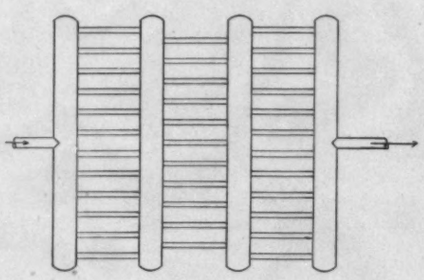


Fig. 3. Sillers' pulsation header.

Fig. 3 illustrates another device operating on the same principle, which was designed by D. A. Sillers. It consists of four headers of 8-inch pipe, each 8 feet long, connected together by 2-inch pipe nipples, about 12 inches long. Between the two inside headers there were 11 nipples, and between these and the two outside headers there were 12 nipples. This device was tried out in a 4-inch discharge line of a four unit compressor station, the line being connected to the mid-sections of the two outside headers. Tests indicated that the error in the meter reading which existed without the device was reduced to about 1 per cent or less.

Neutralization

E. S. Burnett[7] suggested that the most efficient way to overcome the effects of pulsations is to cause them to neutralize themselves, but offered no suggestion of how this should be done. Attempts have been made to split the gas stream up through a number of small lines of (usually) unequal length. The theory, if such it can be called, was that when the small streams re-unite, the pulsation waves will be sufficiently out of phase to neutralize each other by interference. So far such pipe arrangements have not proved to be of any special value beyond the effect of the slight additional resistance offered by the small tubes.

Mufflers of a variety of designs may be considered as a combination of a small amount of throttling and capacity with interference. There have been a few instances of severe pulsations in low pressure lines being successfully dissipated by a muffler section. The pressure loss or throttling in a muffler is very low. However, in most cases the cost of a muffler section of sufficient size and strength to be effective would be prohibitive.

Pressure Piping

Several men stated that their experience indicated the necessity of having the pressure pipes, between the main line and the gauge, geometrically similar. This requirement of similarity applies not alone to the physical dimensions of the leads, but also to the characteristics of fluid flow in *both* directions through each lead separately. It is obviously very difficult to meet this requirement especially at the points of connection to the main pipe.

There is some disagreement as to the effects of restrictions and capacities placed in the pressure leads. The general opinion is that such devices are either of no value or aggravate the trouble. One expressed the view that chokers placed in the pressure leads, if symmetrical with respect to flow in *both* directions might drown out the effects of other parts of the pressure leads. A choker is sometimes placed in the bottom of the gauge manometer to damp the rapid movements of the gauge fluid. However, Gilmore states: "beans and throttling devices in the meter (i.e., the differential and static pressure recorder) itself are entirely *useless* . . . The damping of an orifice meter increases

ELECTROLUX NOW OUTSELLS ALL OTHER REFRIGERATORS IN *Providence*

This outstanding gas refrigeration sales record for 1935 is the result of "continuous promotional and selling effort on Electrolux over a period of several years," says J. L. Johnson, Sales Manager, Providence Gas Company, Providence, R. I.

USES NO WATER
REG. U.S. PAT. OFF.

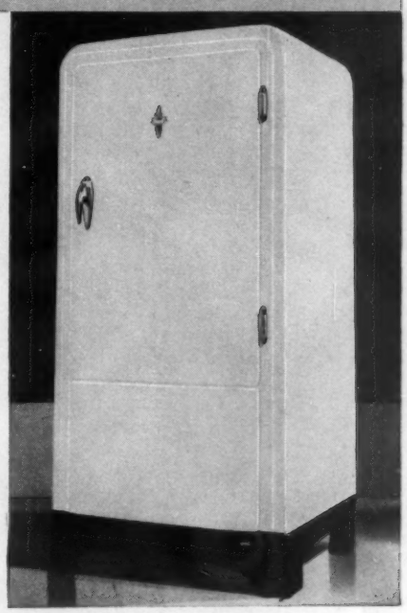
PROVIDENCE gas men are proud of the job they are doing with gas refrigeration! And rightly so! Their aggressive and consistent activity has put Electrolux in first place for automatic refrigerator sales in Providence this year!

Mr. Johnson, sales manager of the Providence Gas Co., finds it difficult to attribute his company's success to any one factor alone. Rather, it was the combination of an enthusiastic sales staff, employee co-operation, fullest managerial support, the sales efforts of dealers, continuous advertising, and payment plans in keeping with the trend in current merchandising.

However, says Mr. Johnson, none of these factors could have achieved the results obtained "if it were not for the fact that the gas refrigerator is superior to any other refrigerator on the market, which in turn has made possible this happy situation: The Trend is Definitely to Gas Refrigeration."

The experience of the Providence Gas Company is becoming increasingly the experience of gas companies the country over. Each year, more and more gas companies are putting the full strength of their organization behind the merchandising and selling of gas refrigeration. And each year, more and more families are discovering that no other refrigerator can match all the important advantages which Electrolux offers. Today, in more than half a million modern American homes, Electrolux is serving faithfully . . . building good-will and increased load for gas companies . . . publicizing gas as the modern fuel.

For assistance in planning your fall and winter Electrolux campaigns, write, wire or phone, Servel, Inc., Electrolux Refrigerator Sales Division, Evansville, Indiana.



NEW *Air-Cooled*
ELECTROLUX
THE SERVEL *Gas* REFRIGERATOR

the inertia of the recording mechanism, which already lacks sensitiveness . . . "

Concluding Remarks

While correction factors may be determined for some simple cases of pulsation this is not feasible in the general case where all the elements of pulsation are changing more or less irregularly. In order to measure gas flows subject to such pulsations, without objectionable error the pulsations must be eliminated or greatly reduced by some of the methods suggested above.

The question of how much it is necessary to reduce the pulsations involves the sensitiveness of the recording mechanism. Hence a study of the sensitivity and inertia characteristics of various types of indicating and recording gauges might prove very helpful.

There have been several pulsometers built for detecting the presence of pulsations and for giving a record of the pulsation wave form. It seems probable that some of these could be adapted to be used as field instruments with which it would be possible to determine at any meter station whether or not there were pulsations present sufficient to cause objectionable errors. The indications of such an instrument might be made a helpful guide in determining the type and size of any pulsation removing appliances needed. For research work it would be very desirable that the pulsometer be able to indicate both the frequency and amplitude of the pressure wave.

REFERENCES

(1) Industrial Fuel Supply Co., Anaheim, Calif. See *Western Gas*, January 1932.

(2) This analysis was offered by E. D. Haiger.

(3) Superintendent Gas Measurement, Lone Star Gas Co., Dallas, Texas.

(4) Gas Measurement Department, United Gas Public Service Co., Houston, Texas.

(5) "Pulsation as Encountered in Flowing Gases," by Lyman F. Scheel, in *Western Gas*, October, 1930.

(6) Proceedings, A.S.M.E., 1928, FSP-51-42.

(7) Mechanical Engineer U. S. Helium Plant, Amarillo, Texas.

Testing Laboratories' Decade of Service

(Continued from Page 27)

light of the responses received, and definite action taken. All clauses thus recommended by subcommittees then proceed to the consideration of the A.G.A. Approval Requirements Committee (A.S.A. Sectional Committee, Project Z21) which must completely endorse each before it is definitely and officially approved. If thus sanctioned, the new requirements are submitted to the American Standards Association and after approval become effective on January 1st of the next succeeding year.

Since 1931, when the program of full cooperation with the American Standards Association was begun and the Approval Requirements Committee became a Sectional Committee of the American Standards Association, practically all of the printed sets of requirements of the American Gas Association have been formally endorsed as American Standards. No other class of home appliances has been so signally honored. Some 24 sets of these standards covering more than 28 varieties of gas burning appliances and their accessories are now American Standard. In the words of Dr. P. G. Agnew, Secretary of the American Standards Association. "This work on gas appliances constitutes the most important job in the standardization of customer goods which has yet been done under the auspices of the American Standards Association, and it seems to me to go a long way toward proving that such cooperative efforts are a paying proposition for producers, consumers, and utilities alike."

25,000 Models Approved

At the present time nearly 25,000 separate models of gas appliances have been approved by Laboratory tests and factory inspections. It is realiably estimated that more than 90 per cent of all the appliances now being sold in the United States and Canada are approved as the result of tests upon more than 8,000 basic models.

Inasmuch as, of the 25,000 designs approved, 99.8 per cent required modification of one sort or another before certification was granted, a tremendous contribution on the part of the Laboratories toward higher levels of design and construction has been made. Over 300 research projects directly associated with gas appliance or gas appliance accessory construction and performance have been completed and reported by Laboratory engineers since 1925. In addition, upwards of 500 minor problems not reported but aimed at the revelation of some particular point of information have been similarly solved.

The Laboratories have also contributed much as a result of their research activities in the fields of industrial utilization, distribution, and gas production. Studies of gas mixing involving 5½ years of continuous effort, fundamental investigations into the basic principles of industrial high temperature gas application, protracted study and testing of mechanical and welded pipe joints, and other projects have been attacked on an exhaustive basis.

Regulatory Function

The Testing Laboratories are more than a testing and research institution. As a consequence of their certification program they are, in a sense, a regulatory body. Annual inspections of all approved equipment are made on the manufacturers' premises, at the places of business of jobbers and dealers, and in some cases even on the premises of users. Regularly, Laboratory inspectors enter all factories producing certified gas appliances and check models on assembly lines or in shipping departments to make sure that each piece of equipment bearing the Laboratory Seal of Approval or Listing Symbol is being constructed exactly as was the sample unit tested and certified. In addition, as a result of a recent ruling, all appliances and their accessories are required to be resubmitted for complete tests every five years in accordance with the latest effective standards. As the art of appliance and appurtenance building advances, higher standards are required of A.G.A. approved products. Approval or listing may not now be continued indefinitely in accordance with standards long outmoded by the improvements of time upon manufacturing skill. For these reasons Laboratory endorsement has come to be highly regarded and in most cases demanded by purchasers of gas appliances from producers.

Stainless Steel and New Orifice Fitting S. C. M. A. Topics

SOUTHERN California Meter Association's September 27 meeting at Lakewood Country Club, Long Beach, brought two excellent discussions before the members present. The first speaker, introduced by Program Chairman D. M. Hill of Foxboro Co., was H. B. Curtis, head of the stainless steel department, Southern California division, Columbia Steel Co., Mr. Curtis' remarks covering stainless steels in modern industry were received with great interest, and extended discussion followed the paper. By arrangement with Mr. Curtis, president F. E. Bradley is planning an October inspection tour through the Columbia Steel plant at Torrance for members of the Association.

Herbert Ingham, chief engineer of the Robinson Orifice Fitting Co., Los Angeles, presented a subject of direct practical interest to the members in his discussion of the new Robinson orifice fitting. One of the fittings was on display and Mr. Ingham demonstrated its operation, as well as giving some background on its design.

Regulatory Expense of Corporation Commission Born by Kansas Utilities

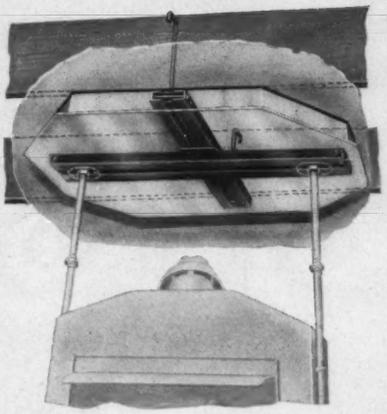
Pursuant to a law which became effective July 1, 1935, providing that the utilities themselves pay the Kansas state corporation commission's expenses incurred in its utility regulatory duty, the Kansas corporation commission recently issued an assessment against utilities of the state to the amount of about $100,000 for regulatory costs for the year 1934. The law provides that whenever the commission makes investigations or appraisals of a utility, the cost of which exceeds $100, the utility shall bear the expense. The total amount in a calendar year assessible against a utility to cover such expense is not to exceed three-fifths of one per cent of its gross operating revenue derived from intrastate operations during the preceding year.

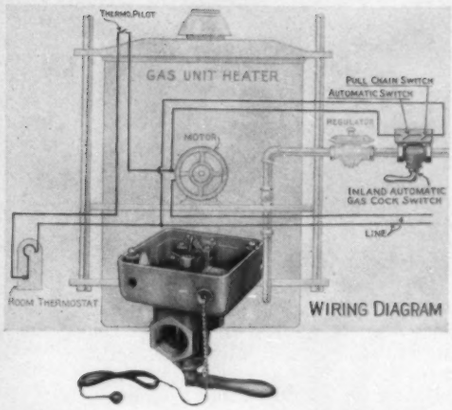
John W. Everman Leaves Dallas Post

John W. Everman, for 15 years public utilities supervisor in Dallas, Texas, has been replaced by Joe Leopold, former regional manager of the U. S. Chamber of Commerce.

Inland GAS SPECIALTIES

Soundly Designed





HANGER AND CANOPY

FOR UNIT HEATERS

AUTOMATIC GAS COCK SWITCH

The Inland Unit Heater Hanger is a sturdy device for suspending all sizes of gas unit heaters from ceiling or roof joists.

Acoustical rubber mountings reduce and isolate the noise.

Heater can be turned to any angle.

Hanger is fastened to ceiling joists with hook bolts, as shown, or lag bolts.

SAVINGS IN LABOR WILL MORE THAN OFFSET ADDED COST OF HANGER.

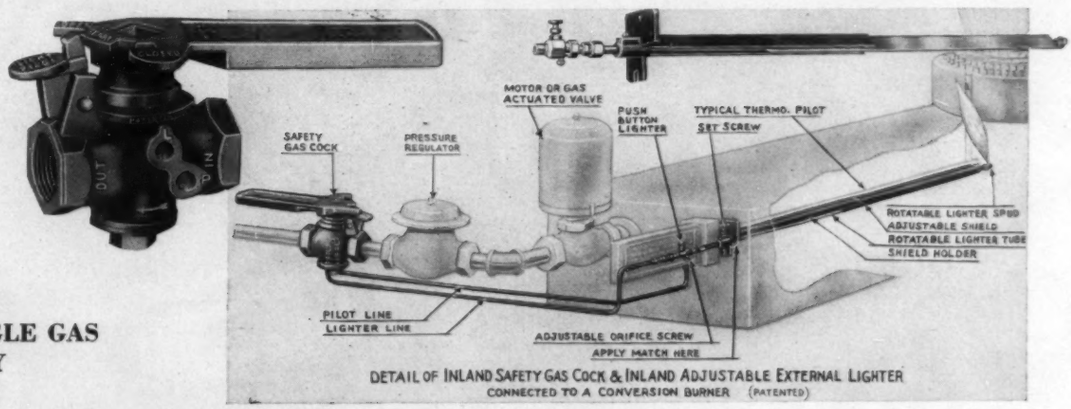
The canopy is an aluminized, rubber-cushioned cover for use in spaces where it is desirable to completely conceal hangers.

A combined gas stop cock and summer switch for gas unit heaters.

Makes a unit heater available for ventilation only, at any room temperature.

Automatically throws a switch ON, simultaneously with the turning of lever handle to close gas cock, which cuts out pilot and room thermostatic controls. Operation of fan on unit heater for ventilation is then controlled manually with the pull-chain switch.

SAFETY GAS COCK



DETAIL OF INLAND SAFETY GAS COCK & INLAND ADJUSTABLE EXTERNAL LIGHTER CONNECTED TO A CONVERSION BURNER (PATENTED)

12,500 USED BY A SINGLE GAS COMPANY

A gas cock for gas conversion burners and gas-designed heating appliances.

Its functions are to shut off all gas in the CLOSED position, to permit only the passage of gas to the pilot and lighter in the START position and only to the pilot and burner in the OPEN position.

The sequence of operations is positive. Gas to pilot and lighter MUST be turned on FIRST—then a definite secondary operation BEFORE gas can be turned on to burner.

If burner is not equipped with an external lighter, lighter opening may be plugged for future use and cock still retains its safety features.

ADJUSTABLE EXTERNAL LIGHTER

A simple device designed for the conversion burner or gas-designed heating appliance not equipped with an external means for lighting.

Makes lighting of pilot by customer convenient and safe.

Length of lighter tube and shield are adjustable.

Lighter flame can be directed to any angle.

Extension tube and shield to raise lighter spud can be furnished.

The fact that the above devices are used as standard equipment by several of the largest utility companies is convincing proof that they are sound in design, sturdy in construction and practical in operation. A folder describing them more fully will be mailed on request.

INLAND MANUFACTURING COMPANY

1120 NORTH CICERO AVE., CHICAGO

Government in Business and the New Deal

"Successful public ownership of power production means an adequate control of transportation and of industrial forces through public ownership of public utilities depending upon electrical power for their successful operation. . . . States under the direction of the public ownership program, and finally the nation, will take over one after another of their public utilities, mines, railroads, interurban electric lines, power plants, telephone and telegraph systems, waterways, forests. And all this may be done by methods perfectly legal and constitutional. . . . In the cities the League works for municipal ownership. Nationally it works for such immediate measures as the permanent public ownership and operation of railroads, the postalization of the telegraphs and telephones, conservation of natural resources and the like."

That this organization has been a factor in organizing sentiment for putting the government into business is suggested by the following from its 1928 annual report to its own membership:

"There is not a state in the Union now that the League has not entered and served. The League has been represented in formal hearings before state legislatures and has prepared the literature and press service and campaigned for weeks at a stretch in statewide referendum campaigns for public power measures. Two radio stations are now broadcasting the League's message every week. A press service is prepared by the League and an ever-increasing number of daily, weekly and monthly publications are using this and other publicity matter prepared by us. The Sacramento Daily Bee and the McClatchy chain of dailies, the Capital Times of Madison, Wisconsin, and the Leader of Milwaukee are making constant use of our material and the Hearst papers have frequently used special articles on the editorial pages of their entire system."

The League's effective working relationship with men in public office is indicated by a quotation from a leaflet written by Secretary Thompson for the Socialist Party as follows:

"There are 855 Socialists in the national parliaments of the world and no less than 10,000 in the municipal councils. These men in the national parliaments, the state legislatures and the municipal councils, are transforming the face of economic history. Their achievements have become the pride of the Socialist movement and the admiration of every student of recent economic history."

More specifically, the League has had definite cooperation of high public officials, as shown by the following from its official publication for February, 1925:

"Members of the Public Ownership League received last month copies of the great speech delivered in the United States Senate on December 17th by Senator George W. Norris on 'Preserve the Natural Resources of Our Country—Muscle Shoals.' This was thru the courtesy of Senator Norris who very kindly sent us a sufficient supply of the address in his franked envelopes so that we could send them out to our active membership list."

This evidence of the use of senatorial franking privilege in promotion of public

(Continued from Page 21)

ownership doctrine refers to 1925. This helpful arrangement with Senator Norris continued, however, as evidenced in the Twelfth Annual Report of Public Ownership League for 1928-29 under the heading "Franked Lietrature" in the following paragraph:

"During the year arrangements have been made with United States Senator Norris for securing large quantities of his addresses in the Senate dealing with public ownership, and especially with the Ontario Hydro-Electric Power System and the question of comparative rates under public and private ownership. These reprints of Senator Norris' speeches are in franked envelopes so that they may be used to great advantage thruout the country in connection with municipal campaigns where these questions are at issue. This constitutes a new feature of the educational work of the League which is very valuable because it enables us at a very small cost to reach every voter in a community."

Seed Sown Early Matures

If it be suggested that this is ancient history, the answer is that the present group of radical legal enactments is the harvest of seed planted a long time ago, which has been cultivated through the years by the same forces responsible for the planting. To prove that the same forces responsible for the planting and the cultivation are at work in the harvest field today attention is invited to the following, again from the official publication of the Public Ownership League of America, for June, 1935, reporting on a conference of the League's membership held in Washington early this year. We quote as follows:

"Following the Public Ownership Conference, Secretary Thompson, responding to a request of Secretary of the Interior, Harold L. Ickes, went over the Department under an appointment as Power Examiner. Here for two months efforts were made to assist the PWA in speeding up loans and grants of Federal funds to municipalities for light and power plants. . . . The Public Ownership League now has some ten or fifteen members of the two Houses of Congress who are also members of the Public Ownership League. This gives the League a very substantial representation in both Houses. Each of these members in both Houses have pending various measures that are of especial interest to the League and progressive forces in general throughout the entire country."

Mentioning specifically some of the members of the two Houses, who are also members of the League, this report of the Washington conference referred to the following:

Congressman John E. Rankin of Mississippi, co-author with Senator Norris of the Muscle Shoals and TVA measures; Senator Homer T. Bone of Washington, who reported to the conference on public power developments in the northwest; Senator Lynn J. Frazier of North Dakota, who outlined provisions of the Frazier-Lemke bill; Representative W. D. McFarlane of Texas, concerned especially with loans and grants to municipalities for utility plants; Representative Paul Kvale of Minnesota, who urged closer cooperation between members of both Houses who are interested in progressive and constructive measures; Representative Kent Keller of Illinois, who presented new phases of the public power movement; Representatives Charles R. Eckert of Pennsylvania, Finley Gray of Ohio, Byron Scott of California, Knute Hill of Washington, "and others." These were credited with having contributed helpfully to the League's conference.

The mutuality of purpose between the Public Ownership League, which has been sowing and cultivating public ownership seed for a generation, and the present administrative department which thought enough of the League's secretary to make him a departmental appointee is indicated by the recent PWA Press Section Release 1322, stating that the Public Works Administration had drafted about 500 representative measures designed to gear local legal machinery of the several states to the speed with which the federal government will prosecute the new work-relief program. This press release stated that these bills were prepared by PWA on requests from state officials and were designed to simplify local procedure, confer additional powers on municipalities to undertake public works projects, revise existing revenue bond acts, validate proceedings for issuance of bonds and other obligations previously taken by municipalities for public works, and to facilitate slum clearance and low-cost housing operations and rural electrification.

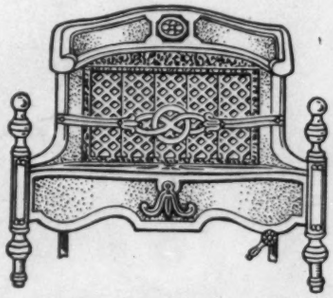
How many of the 500 measures prepared by PWA for state enactment were passed is uncertain, but Morris L. Cooke, in charge of rural electrification for the New Deal, was quoted about June 1 as having said that only 12 states passed the legislation affecting the program under his direction.

Public Utility Commercial Practice In Evening School Course

A free course in commercial practice for public utilities is being offered for the first time in the country at Belmont Evening High School, Los Angeles. The course is conducted three evenings a week in two hour periods. Subjects of lectures will include order procedure, meter reading, addressing, billing, bookkeeping, bill delivering, cash receiving, special collecting and supervising. Wylie Shaffer is the instructor whose knowledge of utilities is grounded in 10 years' experience in utility work and research.

Fort Worth Rate Case Hearing

Hearing before the Texas Railroad Commission on the Fort Worth, Texas, city rate reduction ordinance will be held October 7, at which the city will be asked to defend its ordinance and show reasons why the Lone Star Gas Co. is not entitled to the higher rates it asks. The final decision is expected January 1.



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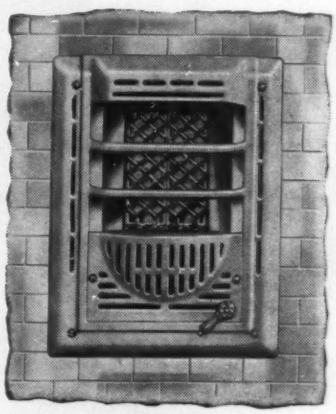
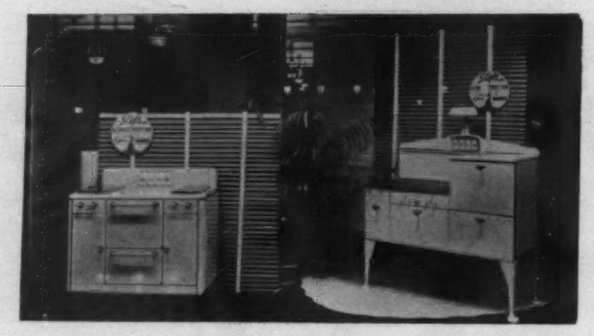


Wall Type for the Bath—White or Colored Porcelain Enamel to Match Your Fixtures



Gas Range Week display in P. G. and E. windows at San Francisco Division headquarters.

Appliance Sales Show Big Increase for P. G. and E.

GAS range sales in the territory of Pacific Gas and Electric Co. for the first 6 months of 1935 were 42 per cent greater than in the similar 1934 period. Total company and dealer sales were 17.336 in 1935, and 12,195 in 1934. In the month containing the annual gas range week of the Gas Appliance Society, sales were 4,394 in 1935 and 3,366 in 1934. Except for this one week no campaigning was done and no special terms offered.

The Pacific Gas and Electric Co.'s Spring automatic water heater campaign resulted in the sale of 5,401 water heaters as against 3,908 during the similar campaign in 1934. These are sales during the three campaign months of March, April and May. Six months sales are 9,696 and 6,497 respectively. Terms during the campaign included a down payment of $3.00, and a minimum monthly payment of $3.00 over a maximum period of 36 months. A trade-in allowance of $5.00 was made on old tank water heaters and competitive fuel heaters. The company paid one-third of the space cost of dealer advertising in cases in which the advertisement was exclusively devoted to automatic water heating and featured campaign terms, A.G.A. approved heaters and a heater retailing for not less than $60.00. The company's own advertising appeared in 294 newspapers and included broadsides, bill boards, bill stickers, truck banners and floor and window displays in the company's 55 offices.

Similar promotional effort has been exerted by the company in connection with the 60-day summer heating campaign ended August 31. The campaign applied to all types of domestic heating equipment, with the exception of circulating heaters. It featured a 10 per cent discount from the installed price (less cost of flue) for Summer purchase. No down payment, and first payment to be deferred to October 1. F.H.A. terms prevailed. Preliminary reports from dealers indicate sales running from 30 to 40 per cent over 1934. Sales to new buildings are particularly satisfying. Heating sales in Pacific Gas and Electric Company territory for the first six months are as follows:

	1934	1935
Radiators	269	224
Radiant Heaters	844	1,084
Floor Furnaces	1,374	2,093
Circulating Heaters	3,311	3,791
Furnaces and Boilers	1,675	2,128

To Utility Companies

OUR client has a background of exceptionally successful experience in organization selling of house-heating and other utility appliances to homes. ¶ Client is thoroughly familiar with latest modern practices in surveying markets, engineering and merchandising and is amply prepared to finance such large-scale sales operation. ¶ Utility Company Executives interested in increasing load through wide sales of appliances are invited to make contact. All communications held strictly confidential.

Address "Utility" c/o

Hurja-Johnson-Huwen, Incorporated
58 East Washington St., Chicago, Illinois

AIR CONDITIONING
Electrogas
HEATING EQUIPMENT

FURNACES BLOWERS FILTERS WASHERS

Write for attractive Dealer proposition

ELECTROGAS FURNACE & MANUFACTURING CO.
2575 Bayshore Boulevard, San Francisco

Court Rules Commission Has No Control Over Company

THE Missouri Supreme Court in an important decision handed down in Jefferson City, September 4, held that the Missouri Public Service Commission has no jurisdiction for rate making purposes over the Cities Service Gas Co. The court by a vote of 4 to 2 held that the Cities Service Gas Co. was engaged in interstate commerce and that the public service commission could not interfere or regulate its operation without violating the injunction of the federal constitution that no burden shall be placed by the states upon interstate commerce. The decision reversed a previous ruling by the supreme court. The court also reversed the Cole County Circuit Court which in December, 1932, upheld the public service commission in an order requiring the pipe line company to file its schedule of rates for industrial gas sold in Missouri.

The commission had contended in its order handed down July 31, 1931, that the Cities Service Gas Co. was doing an intrastate business because it was selling gas to industrial plants in Kansas City, Mo., through an agent, the Kansas City Gas Co. It was further contended at that time by the commission that the pipe line company was engaged in intrastate business because it sold gas directly to a dozen industries along its main lines outside franchise limits of subsidiary companies.

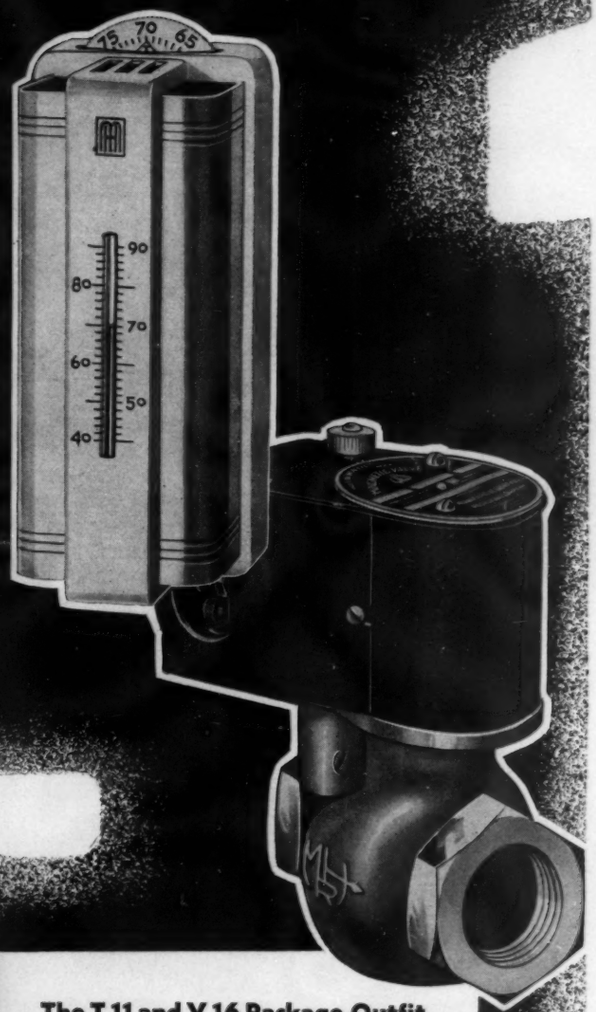
Fisher Regulator New Catalogue

Fisher Governor Co., Marshalltown, Iowa, has published Catalogue No. 32-A covering its line of pressure regulators for the gas industry. The catalogue contains capacity charts for sizing the Fisher line of regulators and tables showing capacities in cu.ft. per hour of pipes of different diameters and lengths, properties of commercial paraffin hydrocarbons, properties of commercial gases, volume correction and conversion.

Guymon Municipal System

Municipal gas system in Guymon, Okla., which was installed in 1934, is being connected to the Cabot Carbon Co.'s well on the Jackson property by a 4-inch 4-mile pipe line which appears to be old boiler tubing. Guymon is now served by the Guymon Gas Co.

A new Gas PACKAGE at a NEW LOW PRICE



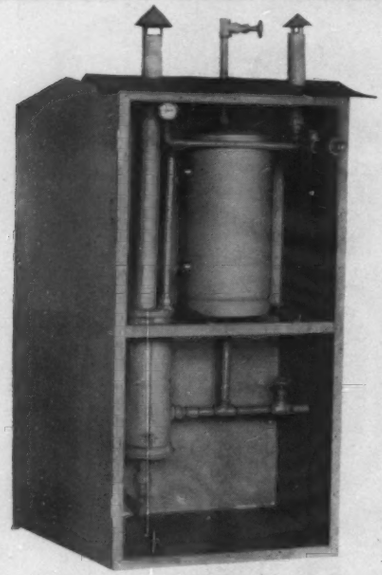
THE new Minneapolis-Honeywell Gas Control Package Outfit, embodies the proved Series 10 principle. Its low price, simplicity and dependability make it the ideal control system for circulating heaters, floor furnaces and small conversion burners in furnaces or boilers. Investigate this new package outfit. Compare its price and its units, and install it on every job. Minneapolis-Honeywell Regulator Company, 401 East Twenty Eighth St., Minneapolis, Minnesota. Branch and distributing offices in all principal cities . . . In Canada; Minneapolis-Honeywell Regulator Co., Ltd., 117 Peter Street, Toronto. European sales and service: 233 Heerengracht, Amsterdam, Holland . . . . .

The T 11 and V 16 Package Outfit consists of the Acratherm, a three quarter inch, large capacity, silent solenoid Gas valve, transformer, 3 wire cable and staples. The Acratherm provides leveled heat at all times. The solenoid valve is equipped with shut-off which automatically closes and automatically resumes operation when power is restored in the event of power failure. When power is off, the valve may be manually operated . . .

MINNEAPOLIS HONEYWELL

Control Systems

BROWN INSTRUMENTS FOR INDICATING, RECORDING AND CONTROLLING

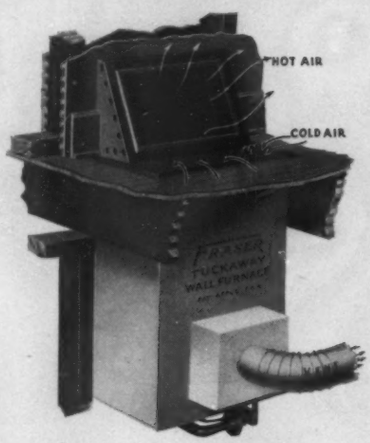


TANNER TANKS AND "FREEZE-X"
Completely Clears Gas Mains Of ICE STOPPAGE

For Particulars Write

Sullivan Machinery Co.
307 N. MICHIGAN AVE.
CHICAGO, ILLINOIS

FRASER
TUCK-A-WAY



An entirely new idea in Furnace Construction
Made in 4 sizes

Manufactured by
Fraser Furnace Company
Stockton, Calif.
Distributed by
H. R. Basford Company
San Francisco Los Angeles

Cellophane and Kodapak for Pipe Line Protection

(Continued from Page 23)

Melting point, ball and ring	160 to 175° F.
Penetration—100 grams 5 sec.	
77° F.	18 to 25 cm.
Flash point	440° F.
Solubility in CaCl	99.5%
Volatility 325° F. 5 hrs.	0.5%
Ductility 77° F.	1.5 cm.
Tensile strength 77° F.	3 kg. per cm²
Sulphur—not greater than	1.5%

The proper melting point, penetration, etc., can and should be varied to meet the climatic conditions at time of application.

Materials required for coating 100 lineal feet of pipe are shown in Table No. 1. The complete Cellophane or Kodapak coating is slightly lower in cost than other materials now being used.

In our experiences Cellophane and Kodapak for pipe wrapping have been used only in conjunction with hot asphalts and coal tars. However, we see no reason why any suitable material cannot be used with Cellophane and Kodapak, and it may come to pass that some other coating material will be developed for use with these wrappings that will provide equal or perhaps better protection to underground metallic piping.

These low water absorption properties are conducive to high electrical resistance and low conductance. Recent tests in the field of the conductance of these coatings, using the methods developed by Doctors Scott and Ewing, showed that their conductances were very low as compared to other pipe coatings which we have in the same localities.

We have found from experience where pipe lines are laid near trees or shrubs, that roots are attracted by the moisture which seeps through the cracks in the coating produced by soil stress and penetrate the coating down to the pipe. Inspections of pipe wrapped with Cellophane or Kodapak laid near trees or shrubs revealed that roots were able to penetrate only the outer layer of asphalt.

Up to the present time, we have installed approximately 30 miles of pipe line ranging in size from 2 inches to 12 inches, and 250,000 lineal feet of 1 inch service pipe using Cellophane and Kodapak wrappers.

We are unable at this time to make any definite prediction of the results a few years hence, but from recent inspections of pipe lines with these coatings, we are led to believe that we can expect additional pipe life as compared to most other kinds of coatings.

Inducement Rates Applied by Southern California Gas

IN its San Joaquin and Midway Divisions, Southern California Gas Co. on July 4 applied a new rate schedule which incorporates several inducement features. As a part of the new schedule, a general rate was introduced representing an overall cut of approximately 10 per cent in revenue.

A two-use rate available to customers using gas for cooking and water heating brings reductions of 13 to 16 per cent in unit gas charges, to customers adding new equipment to qualify for the rate.

A three-use rate, specifying that automatic water heating, cooking and heating equipment be used, involves even greater reductions from previous rates—ranging from 29 to 32 per cent for new customers or 10 to 32 per cent for those adding equipment to qualify. It will be noted that this rate calls for automatic water heating, while the two-use rate permits any type of water heating by gas.

The new rates all carry a $1.15 charge for the first 600 cu. ft. or less, and then step down as follows, per meter per month:

General Rate (Minimum Charge $1.15)

	Per 100 cu. ft.
Next 2,400 cu. ft.	10.5c
Next 7,000 cu. ft.	7.0c
Next 10,000 cu. ft.	5.6c
All over 20,000 cu. ft.	4.9c

Two-Use Rate (Minimum Charge $1.15)

	Per 100 cu. ft.
Next 2,400 cu. ft.	8.5c
Next 7,000 cu. ft.	7.0c
Next 10,000 cu. ft.	5.5c
All over 20,000 cu. ft.	5.0c

Three-Use Rate (Minimum Charge $1.25)

	Per 100 cu. ft.
Next 2,400 cu. ft.	6.0c
All over 3,000 cu. ft.	5.0c

Behind the new rates is a study carried on by the company which brought forth facts on appliance consumption and revenues, and appliance saturation, demonstrating the soundness of this type of schedule.

Surveys in the San Joaquin district showed only a 10 per cent saturation of automatic water heaters as compared to a system average saturation of approximately 50 per cent. In the same district from 2 to 3 per cent of the customers had floor, unit, and central furnaces, contrasted with a 10 per cent system average.

From the above facts it was apparent that advantage would result from offering inducements for automatic water heating and major space heating, rather than merely passing on a rate reduction to convenience users.

In applying the new rates the company notified customers by advertising and direct mailing. A company representative visited the premises of each customer who requested the new rates, to see that appliances installed would qualify the user for the lower schedules.

International Petroleum Exposition Plans Under Way

Ninth International Petroleum Exposition and Congress will be held May 16 to 23, 1936, in Tulsa, Okla., according to W. B. Way, general manager of the Exposition. Mr. Way states that plans are well under way and that about 100 booths have been sold to date. W. G. Skelly, president of the Skelly Oil Co., is president of the Exposition.

P. G. and E. Links to Tracy Field

Pacific Gas and Electric Co., San Francisco, is constructing an 8-inch pipe line about 8 miles long, from the Amerada Petroleum Corp. discovery well at the Tracy gas field, to feed into its main trunk line from Kettleman Hills to the Bay District.

This Year It's **PACIFIC!**

Regardless of your requirements, PACIFIC can furnish safe, economical, efficient gas-fired appliances for any heating problem. Space heaters for single rooms. Unit or central warm air furnaces for residential, commercial and industrial applications. Gas Steam radiation. Radiant heat. Fan-forced unit heaters. Central blower furnaces for supplying circulating warm air to meet any given heat requirement.

Call upon us at any time—without obligation—for consultation, suggestions, estimates.

1936 CATALOG NOW READY!

New literature describing Pacific Gas Heating appliances is now ready. Copies will be sent gladly to any gas company executive, on request. When you specify Gas Heating, remember—**This Year, It's "PACIFIC"!**

World's Most Complete Line of Gas Heating Appliances—

Pacific

GAS HEATING HEADQUARTERS

Pacific Gas Radiator Company, Huntington Park, California, U.S.A.

CONNELLY

CALOROPTIC BTU INDICATOR:
Can be fitted with Signal and Alarm Unit.

GOVERNORS:
Station, Balanced and Automatic.
District—Float and Diaphragm Control.
Service—All sizes for any Pressure.
Appliance—Full line of accurate, compact Regulators for all gas appliances.

VALVES:
Reducing; Relief; Combination for pressure and vacuum; Back Pressure; Gas Screens.

GAUGES:
All Sizes; fitted with "Unbreakable" tubing.

Gas Purifying Materials:

CONNELLY IRON SPONGE and
CONNELLY IRON OXIDE ORE.

Connelly Iron Sponge & Governor Co.

Chicago, Ill., 3154 South California Ave.
Elizabeth, N. J., 200 South Second St.
AGENTS
Theo. H. Piser, 155 Moffat Rd., Wayban, Mass.
Parsons Engr. Co., 525 Market St., San Francisco

Byllesby Eng. and Management Stock Sold to Operating Companies

John J. O'Brien, president of Standard Gas and Electric Co., announces that the company has sold to operating companies in its system, and without profit to it, the stock of Byllesby Engineering and Management Corp., all of which has heretofore been owned by Standard Gas and Electric Co. The sale of this stock to the operating companies in the Standard Gas and Electric Co. system has been made to carry out the spirit of the recently enacted Federal Public Utility Act of 1935, various state legislation, and the decisions of certain state regulatory commissions. Byllesby Engineering and Management Corp. has for many years rendered management, engineering and other services to these operating companies, which will now be enabled to establish a mutual service company.

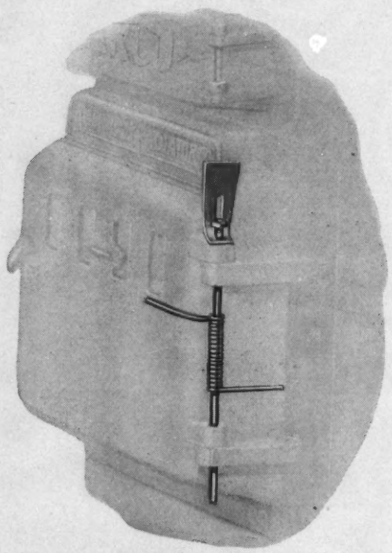
Heating Campaign Under Way at Lincoln, Neb.

The Lincoln, Neb., district of the Iowa-Nebraska Light & Power Co. on September 20 inaugurated a heating campaign which will push toward a goal of 500 new house heating customers. Every employee of the district staff attended a rally on the eve of the campaign at the Lincoln Hotel.

To popularize the campaign the company is distributing aprons and over 5,000 hats embroidered with the slogan "Enjoy Gas Heat", through school children. The campaign stresses automatic house heating, water heating and humidification. Special prices are offered on water heater-burner combinations, and a humidifier is included free with each heating sale.

Inland Mfg. Co. Announces New Furnace Door Spring

Inland Manufacturing Co. of Chicago placed on the market recently the door spring assembly shown in the illustration. When the furnace door is blown ajar, the spring closes



the door automatically. The hinge pin is used to replace the two hinge pins in the fire door. The wedge at the top of the pin can be used to hold the door in the open position when necessary. The pin and spring are cadmium plated for durability.

Heating Sales on Northern Natural's System Show Increase

Distributing properties served by Northern Natural Gas Co. showed 1,759 heating installations between May 1 and September 1, as against 1,115 during the same period in 1934, and 827 during the same period in 1933. This record performance increases the number of heating customers on Northern Natural's system to 16.86 per each 1,000 population.

For the distributing companies controlled by Northern Natural, incentive was added for house heating sales by the offer of a trip to the A.G.A. Convention at Chicago in October, to the district superintendent with the best record for the period from August 15 to October 10.

Oklahoma Natural Construction Work

Oklahoma Natural Gas Co., Tulsa, Okla., has under way extensive repair and construction work in and about Oklahoma City, Okla. The principal project is construction of an 8-mile pipe line from a new gas field 4 miles west of Edmond to the company's main line between Oklahoma City and Tulsa. Belt lines and distribution mains are being repaired. Completion of the work is expected by December 1.

Come and See It—

THE LIQUEFIED PETROLEUM-AIR GAS MACHINE

which is vitally important to you if you are interested in extending your service beyond the gas mains.

It can also show big savings as a standby unit for peak loads in small gas plants.

You ought to see this gas machine, and you can see it while attending the A.G.A. convention in Chicago.

One is in operation near convention headquarters—5 minutes from the Palmer House.

Call EDWARD A. DIETERLE

Peoples Gas Building—122 S. Michigan Ave.—Harrison 6657

BUTANE-PROPANE NEWS

General Petroleum Adapting Oil Field Engines to Butane

General Petroleum Corp. of California is preparing to adapt a score or more gas engines in the Edison district near Bakersfield to combination service on butane. The engines, ranging from 40 to 60 h.p. are in oil pumping service. Due to the fact that heavy oil is being pumped, a considerable head of liquid builds up whenever the engines shut down, which shuts off the fuel gas supply to the engines. Semi-portable butane units consisting of a small vaporizer and supply cylinder will be used to run the engines. They will operate on butane for periods of from 8 to 15 hours, to pump off the accumulated head of oil, after which gas service will be resumed.

Frank S. Burt, gas engineer for General Petroleum, is assisting in adapting the engines to butane service.

Bottled Gas Demonstrated at Texas College

Lone Star Gas Co., Dallas, Texas, finds that club and school functions afford an excellent means for educating the public in the uses of Stargas, the company's bottled fuel. At the annual short course of the Texas Agricultural and Mechanical College conducted for 4-H Club members from July 29 to August 2, two Stargas installations were set up at stands with another installation in the Animal Industry Building which was used in a dyeing demonstration by a representative from the Bureau of Home Economics, Washington. A Stargas display was held in the Agricultural Engineering Building and a demonstration truck was located on the camp ground, where it was used in preparing several meals. The short course was attended by about 2,000 boys and girls.

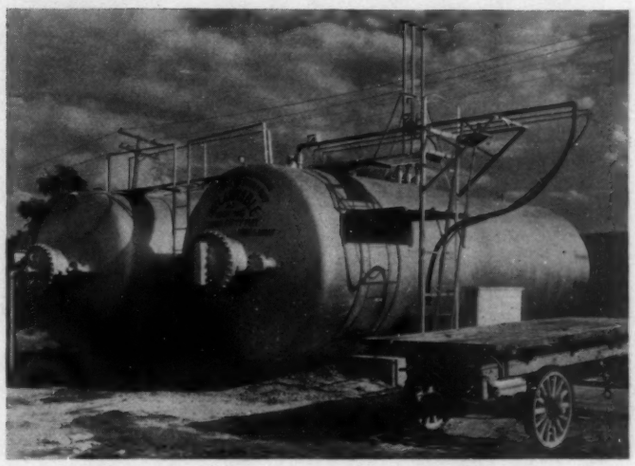
Philgas New Distribution Station Erected at Niantic, Conn.

A new bulk station for the distribution of Philgas has been erected and put into operation at Niantic, Conn., by the Philgas Department of Phillips Petroleum Co., headquartering in Detroit, Mich. It will combine the activities of the two former subdistricts of Westbrook and Groton, Conn., which had been supplied by tank-truck from near-by Philgas stations.

The personnel of the two subdistricts will be retained. Andrew H. Olson, formerly manager at Groton, will be sales manager, and Ralph Miles, formerly manager at Westbrook. will be operations manager.

M. R. Brown Resigns at Roseburg

M. R. Brown, for eight years manager at Roseburg for the Southern Oregon Gas Co. resigned recently. W. D. Reed of the Roseburg office has been appointed to act as district manager temporarily, pending reorganization of the district office.



Storage installation at San Antonio plant of Southern Steel Co. Tanks are of 18,000-gallon capacity each.

Bulk Storage for Southwest Small Plant Owner

WHAT is thought to be the only butane bulk station in the Southwest, outside of those installed at production plants, has recently been installed by Southern Steel Co., San Antonio, Texas. At this time the company is using only one of the 18,000 gallon containers shown in the accompanying view, but plans to put the other into service shortly.

From the above station, fuel is being supplied several hundred owners of individual liquefied petroleum gas plants in Texas. The storage is filled from tank cars on the company's own railroad spur and is distributed by motor truck.

The individual plants supplied are distributed by R. L. Edwards of San Antonio, under the name of "Hydro-Gas plants."

The fuel used is principally Iso-butane, and reaches the user at 9 to 15 cents per gallon, depending upon quantity taken and distance hauled.

Underground containers varying in size from 75 gallons to 1100 gallons capacity are buried below frost level. To prevent condensation from excessively low temperatures, a water pipe is run through the bottom of the tank, and a gasifier consisting of a second water pipe is also installed at the low point of the service line. This low point is located on top of the storage tank, and any condensation in house piping is regasified at this point.

Fuel is metered into customers' tanks from the tank truck, and the tanks are supplied both with sight gauges and slip gauges.

Southern Steel Co. manufactures the above plants for the distributor and has installed the bulk storage plant to facilitate fuel supply to plant owners.

D. E. York Appointed General Manager Southern Oregon Gas Corp.

D. E. York of San Francisco has been appointed vice-president and general manager of the Southern Oregon Gas Corp., Medford, Ore., according to J. A. Ward, president of the company. Mr. York has been in southern Oregon in charge of the company's new construction work since February, and has been with the Republic Management Co., which controls Southern Oregon Gas Corp., for the past several years as chief engineer.

FHA Loan Equipment Booklet

The Federal Housing Administration has just issued a booklet which lists types of equipment and machinery that are eligible for F.H.A. loans up to $50,000. The booklet can be obtained at any local F.H.A. office.

Absorption Plant to Be Constructed on Long Lake-Cayuga-Irving Line

LONE STAR GAS CO., Dallas, Texas. according to E. F. Schmidt, superintendent, was scheduled to begin construction October 1 on a high-pressure gasoline absorption plant which will have a daily capacity of 75,000,000 cu. ft. of gas about ¾ mile from Trinidad on the route of the company's new 110-mile Long Lake-Cayuga-Irving pipe line now under construction. It is understood that part of the Gainsville gasoline plant will be dismantled and used in the construction of the new plant. Completion is expected early in December.

John Kindle is in charge of building work and will be plant superintendent. J. L. Foster, chief engineer, and J. R. Jarvis, superintendent of gasoline plants, were in charge of designing and will help supervise construction.

KEROTEST
tested and proved
FORGED BRASS
CYLINDER VALVES
and S. A. E.
FLARE FITTINGS
for
PROPANE
BOTTLED GAS
SERVICE

Write for descriptive circular
KEROTEST MFG. CO.
PITTSBURGH, PA.
KEROTEST

Stargas Used by Dallas Railway and Terminal Co.

Stargas, propane product marketed by the Lone Star Gas Co., is extensively used by the Dallas Railway and Terminal Co. for cutting rails, brazing copper cable bonds, preheating switches before pouring babbitt, melting babbitt and for drying sand. In addition to being considerably cheaper than acetylene, it has been found that Stargas makes a cleaner cut, leaving a minimum of slag. Backfire, common to acetylene torches when dirt is encountered, is eliminated with the specially designed Stargas torch.

In brazing copper bonds the Stargas flame does a better job since it is not as hot as the acetylene flame and hence the brazing rod does not burn out the zinc. Stargas has displaced kerosene, formerly used by the Dallas Railway and Terminal Co., in all its rail preheating, babbitt melting and sand drying operations.

New Victaulic Sales Co. For California

Gene McIntyre is in charge of sales for the newly formed Victualic, Inc., Roosevelt Building, Los Angeles, Calif., which will handle products of Victualic Co. of America and of Hanlon-Waters, Inc., in California. The Victualic couplings combine the features of a straight line coupling, a flexible coupling, an expansion joint and a mechanically locked joint. The Hanlon-Waters line includes oil and gas separators, automatic regulating and control equipment, load binders and gauge cocks.

Trucks at Cajalco Dam Will Be Equipped for Butane

GRIFFITH CO., Los Angeles, Calif., contractor for Cajalco Dam at the western terminus of the Metropolitan Water District aqueduct, in September purchased 30 Mack Trucks, and is equipping them with Holzapfel butane carburetors. Equipment for adapting the trucks to butane fuel, including carburetors and fuel supply tanks, is being installed by Electric & Carburetor Engineering Co. of Los Angeles.

Parkhill-Wade, Inc., is installing two 8,000-gallon storage tanks for butane at Cajalco Dam, together with pressure filling and metering equipment. If butane is specified for construction camp purposes, the same storage facilities will be used. Richfield Oil Co. is to supply butane under the present contract.

Construction work will involve moving eight million yards of dirt at the dam, and the contractor estimates that $50,000 will be saved by use of butane rather than gasoline as truck fuel during the three year operations.

Detroit Vapor Stove Co. Has New Home Economics Dept.

Detroit (Mich.) Vapor Stove Co. has established a new home economics department which will advise and assist its dealers in conducting cooking schools, demonstrations and meeting homemaking problems. The program also includes a weekly recipe service to dealers and the conducting of experiments in range cooking. Miss Ruth Graham, formerly assistant director of the home service department of the Norge Division of Borg-Warner Corp., is director of the new department, which will headquarter in the model kitchen at the factory.

Nashville Gas and Heating Co. Opens Range Campaign

Nashville (Tenn.) Gas and Heating Co. on September 24 began a cooperative gas range campaign that will run for six weeks. Local papers on September 23 featured campaign announcements, with company and dealer advertising offering as a premium with each range purchased a 32-piece chinaware set. Easy payment plans and liberal trade-in allowances are being offered during the drive.

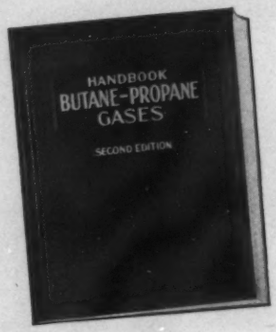
Leaflets Describe Ensign Carburetors

Ensign Carburetor Co., Ltd., Huntington Park, Calif., has recently released Form Nos. 69, 82, 84, 86, 87 and 88 describing its line of natural gas and/or combination gas and gasoline carburetors. It also announces that Ensign equipment is now standard with Waukesha Motor Co., Caterpillar stationary engines, LeRoi Co., and Buda Co.

Henry Bourne Transferred to Houston

Henry Bourne, for the past 10 years Los Angeles district manager for A. O. Smith Corp. of Milwaukee, has been transferred to Houston, Texas, as district manager of the Houston area for the company.

THE ONLY
HANDBOOK OF
BUTANE-
PROPANE
GASES



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810 South Spring St.
Los Angeles, California

New Process Converts Petroleum Gases Into Gasoline

EXTENSIVE use of propane, butane and other light hydrocarbons for the manufacture of premium grade gasoline is expected to result from a recently developed process called polymerization. Phillips Petroleum Co. has organized a new corporation, the Polymerization Process Corp., through which patent licenses for its application will be available to the petroleum and natural gas industry.

Frank Phillips, president of Phillips Petroleum, said that an exchange of patents gives the Texas Co., the Standard Oil Co. of Indiana, and the Standard Oil Co. of New Jersey, an interest in the new corporation and that they will use the new process.

M. W. Kellogg Co., which has been appointed licensing agent, is prepared to make estimates and bids on complete plants for application of the new method.

The polymerization process is a radical departure in that it changes the chemical composition of refinery and natural gases, instead of separating physically the various grades from these gases. Through its use many plants will be enabled to utilize for gasoline production gases which have hitherto been waste-products.

T. B. Hudson, of the Phillips organization, is president of the new unit.

Kansas and Missouri Properties Under New Control

A transfer of title for numerous gas properties in Kansas and Missouri has just been granted to the Central West Utility Co., a new corporation located in the Finance Building, Kansas City, the properties being taken over from the Bankruptcy Court.

The properties consist of gas distributing systems in Liberty, Smithville, Plattsburg and Avondale in Missouri; and Bonner Springs, Eudora, DeSoto, Lake of Forest, Council Grove, Wilsey, White City, Delevan, Herington, Hillsboro, Tampa, Ramona, Lost Springs, Lincolnville, Aulne, Peabody, Florence, Marion, Moline and Pilsen in Kansas.

The properties operate 160 miles of transmission line and have gas production in Morris, Marion and Elk Counties in Kansas.

Ernest Duree who recently resigned as superintendent of operations with the Northern Natural Gas Co. of Omaha, is in charge of the above gas properties, under the new set-up.

Court Rules Unconstitutional to Assess Companies for Regulatory Expense

Supreme Court of the State of Washington recently ruled as unconstitutional the state law assessing utility companies for the cost of conducting investigations by state regulatory bodies for rate-fixing purposes. The court pointed out that such a law would make it possible to launch a series of investigations against a single company, resulting in its destruction.

Bulletins on Industrial Use

Two new bulletins on the industrial application of propane have been issued by the Philgas Dept. of Phillips Petroleum Co., Detroit, Mich. They are: No. 53, "Propane for Refining Lubricating Oils," and No. 54, "Industrial Propane Gas for Bright Annealing."

Design and workmanship, based on skill and experience make Pressed Steel Tank Company leading suppliers of cylinders for Butane, Propane, and Propane Butane Gases.

There are two Hackney cylinders in service for every one—of all others combined. That fact proves the lead that Hackney cylinders hold, and continue to hold.

Phillips, Skelly, Hope, Shell, Standard, and other leaders choose Hackney cylinders.

And, for other gases, Hackney cylinders are selected by companies like: Virginia Smelting, Mathieson, Frigidaire, Ansul, Pennsylvania Salt, duPont, Shell Chemical, etc.

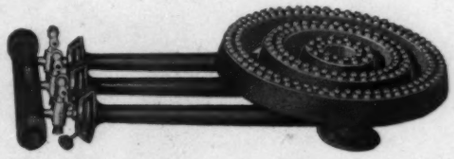
Hackney is out in front—in long life and dependability and economy.

Pressed Steel Tank Company

208 S. La Salle St. Bldg., Room 1185, Chicago, Ill.
1363 Vanderbilt Concourse Bldg., New York, N. Y.
6633 Greenfield Avenue, Milwaukee, Wisconsin
666 Roosevelt Bldg., Los Angeles, California

Hackney
MILWAUKEE

CONTAINERS FOR GASES. LIQUIDS AND SOLIDS



JOHNSON ATMOSPHERIC RING BURNERS

The design and construction of Johnson Ring Burners insure continuous, efficient, economical service. They are made up of three independent ring burners which may be used singly, in pairs, or in triple. Write for full details.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Western Representative:
C. B. BABCOCK CO.
135 Bluxome Street
San Francisco, Calif.

Eastern Representative:
J. H. McPHERSON
250 Stuart Street
Boston, Mass.

Inviting displays contributed to the sale of more than 350 gas appliances during 1934, by ART V. MILLER, LOS ANGELES.

You, too, can "cash in" on the great and growing demand for modern gas appliances. Your gas company is "right behind you."

Five reasons why GAS is the preferred, modern fuel . . . five reasons why GAS APPLIANCES make money for Art Miller and other progressive plumber-merchandisers.

This Plumbing and Heating Contractor did not wait for better times . . . he made them by concentrating on gas appliance sales.

Art Miller's total business volume during 1934 exceeded $35,000, of which 75 per cent was realized from his gas appliance department.

Last year Mr. Miller sold 100 gas refrigerators, 40 gas ranges, an average of 16 gas water heaters a month. He also handles a full line of gas heating equipment, from central furnaces to small circulating heaters.

"I attribute this profitable merchandising largely to four factors", he says: "a good location, attractive displays, the featuring of quality lines, and close cooperation with the gas company."

Gas
The modern fuel

PACIFIC COAST GAS ASS'N, INC.
{A non-profit service organization of which your gas company is a member}
447 SUTTER STREET, SAN FRANCISCO

839

Dealer Advertising

The Gas Industry's cooperative load-building program includes monthly advertisements in two publications influencing appliance dealers: "*Western Furniture Retailing*" and "*Western Plumbing & Heating Journal.*" Reproduced above is a recent message featuring a successful Los Angeles merchant-plumber. Results prove two tangible benefits from this advertising — increased good will on the part of dealers featured, and greater sales efforts on the part of other dealers inspired by these "success stories."

A. C. JOY
(P. G. & E.)
Chairman, Cooperative Advertising Committee

J. S. SPAULDING
(L. A. G. & E.)
Chairman, Publicity and Advertising Section

With the ASSOCIATIONS

Program Set for Midwest Industrial Men—October 18

MIDWEST Industrial Gas Sales Council will hold its regular fall meeting on October 18, the day following conclusion of the A.G.A. Convention, at the Palmer House, Chicago. L. R. Foote, chairman of the program committee, sends *Western Gas* the following set-up for the meeting:

"Gas for Burning Lime"—Joseph Kahn, The Peoples Gas Light & Coke Co.

"The Gas-Fired Convected Air Tempering Furnace"—A. E. Grapp, president, Despatch Oven Co.

Sales Experiences

Topic: "Ferrous Metal Treating"—Hale A. Clark, Detroit City Gas Co.

Topic: "Open Faced Forges"—M. W. Martin, Public Service Co. of Indiana.

Topic: To be announced—C. H. Lekberg, Northern Indiana Public Service Co.

Topic: "Heat Treating: Oil to Gas Conversions"—George A. Uhlmeyer, Peoples Power Co., Moline, Illinois.

Topic: To be Announced—N. R. Gorsuch, Citizens Gas Co., Indianapolis, Indiana.

Oil Burner Institute Organization

At a recent meeting in Cleveland of leading oil burner manufacturers, it was decided to create an Oil Burner Institute to succeed the American Oil Burner Association. Present members of the American Oil Burner Association will automatically become members of the Oil Burner Institute. The new organization will extend its membership to include all manufacturers of oil burning appliances.

Calendar

October

American Gas Association—17th Annual Convention, Palmer House, Chicago, Ill., October 14-17.

Midwest Industrial Gas Sales Council—Fall Meeting, Palmer House, Chicago, Ill., October 18.

National Association of Railroad and Utilities Commissioners — Annual Convention, Hotel Hermitage, Nashville, Tenn., October 15-18.

National Safety Council — Annual Safety Congress and Exposition, Louisville, Ky., October 14-18.

November

Mid-West Gas Association — Fifteenth Gas School and Conference, Iowa State College, Ames, Iowa, November 6-9.

Wisconsin Utilities Association, Technical and Operating Section — Annual Convention, Green Bay, Wis., November 11-12.

American Petroleum Institute—16th Annual Meeting, Biltmore Hotel, Los Angeles, Calif., November 11-14.

American Institute of Chemical Engineers—Annual Meeting, Columbus, Ohio, November 13-15.

December

American Society of Mechanical Engineers—Annual Meeting, Engineering Societies Building, New York City, December 2-6.

Wisconsin Utilities Association Annual Meeting

HOWARD W. COOPER, vice-president of the Wisconsin Power & Light Co., Madison, Wis., was elected chairman of the Commercial Section of the Wisconsin Utilities Association at the annual meeting of the Association held in Milwaukee, September 9th and 10th. Ross Williams, sales manager of the Wisconsin Michigan Power Co., Appleton, was elected vice-chairman.

Allan Davey presided over the meeting of the Gas Merchandising Division held on the first afternoon of the conference, presenting as introductory speaker, Charles G. Grau, manager of the Oneida Gas Co. of Rhinelander, on the subject "Selling Storage Water Heaters in the Average Wisconsin City."

A. A. Zertler, president, Peoples Gas Co., Marshfield, covered the subject, "What the Gas Range Means to the Average Gas Company" and C. A. Debell, Wisconsin Public Service Corp., Sheboygan, followed with an address on "Putting Electrolux on the Map at Sheboygan."

Papers on "Selling Gas Ranges in the 1935 Market" and "What an Upstairs Control Represents in Added Revenue," were read in turn by H. F. Patterson, Cribben & Sexton Co., Chicago, and J. H. Fagan of J. H. Fagan Co., Milwaukee.

A Specialized Gas Round Table Conference held on the afternoon of the last day featured discussions on "Rehabilitation of Commercial Kitchens Provides Greater Profits," "Air Conditioning," "The Romance of Gas" and "New Developments in Commercial Cooking and Baking Equipment". These subjects were introduced in the order named by L. A. Dubberke, Milwaukee Gas Light Co., Major W. E. Stark, Bryant Heater & Mfg. Co., Cleveland, W. V. Rifle, president of Miss America Heater Corp., Chicago; and Wm. H. Guenther, Detroit-Michigan Stove Co., Detroit. E. R. Felber, chairman of the Gas Utilization Committee presided over the meeting.

15th Conference Due at Ames, Iowa, Nov. 6-9

MID-WEST Gas Association has set the dates for its 15th Gas School and Conference as November 6-7-8-9, 1935. This annual event is sponsored by the Association and conducted jointly with the Iowa State College Engineering Extension Service, with sessions held at the Iowa State College, Ames, Iowa.

R. B. Searing, secretary-treasurer of the Association, informs *Western Gas* that topics selected for presentation on this year's program are as follows:

Latest word on orifice meter measurement.

Mixing gases and meeting the peak load.

Compare pressure method and direct method of conversion.

Protection measures and methods for reducing unaccounted-for.

Odorization of gas.

Condensation in chimneys.

Controls on gas-fired industrial type boilers.

Education of public on handling house heating equipment.

Service regulators or appliance regulators for perfect pressure control.

Domestic air conditioning.

Entertainment will consist of the customary banquet Thursday evening, a Dutch lunch Friday evening, and a football game Saturday afternoon, between the Iowa State College and the State College of Kansas.

Wisconsin Utility Association Technical and Operating Section Convention

The Technical and Operating Section of the Wisconsin Utilities Association has chosen November 11th and 12th as its convention dates, with the meeting to take place at Green Bay, Wis.

Round Table conferences in the Gas Division will replace the usual type of program, with special discussion being planned around production, distribution, servicing appliances, mains and services, and meters. Addresses on operating problems presented by the introduction of objective rates, on safety and on legislation are planned for general sessions of the Gas and Electric Divisions.

E. C. Brenner of the Milwaukee Gas Light Co., H. R. Broker, Wisconsin Gas & Electric Co., Racine, and H. B. Hummell, Wausau Gas Co., have been named as a nominating committee for the Gas Division and are to select candidates for the offices of chairman and vice-chairman of the Division for the coming year.

Gas Used in Charcoal Plant

Charcoal, Inc., Los Angeles, a plant that converts walnut shells into charcoal, operates on natural gas. The shells are carried on an automatic vane feeder through a large tube that extends the length of a gas fired furnace. About 2,000 cu. ft. of natural gas per hour are consumed by the plant.

C.G.A. Admits Natural Gas Men

Canadian Gas Association has drawn up a new constitution and by-laws which will admit natural gas men to active membership. Formerly natural gas men were admitted only on an associate basis with no voting or office holding privileges.

Why Not Do Something About It?

Every year lots of thrifty people who own basement furnaces turn them on at the last possible moment in the fall . . . and off too soon in the spring, sacrificing comfort for the sake of a saving in gas bills.

Why not do something about it? A WARD Floor Furnace in these homes, used as auxiliary heat when the basement furnace is off, will **build your load** and **increase your profits.**

For further information write

WARD HEATER CO., Ltd.
1800 W. Washington Blvd.
LOS ANGELES, CALIF.
PArkway 9171

Soboba
MINERAL HOT SPRINGS

REST, play and enjoy life at Soboba. Every facility for your comfort and convenience. • 89 miles--paved, no grades--from Los Angeles. • Unexcelled curative mineral waters. • Riding, golf, swimming and hiking. • Excellent cuisine with moderate prices. • European plan from $1.50 to $4.50. Write for booklet to

JOHN G. ALTHOUSE, *Owner and Manager*

SAN JACINTO *California*

Industrial Sales to Conform With Company Aim

(Continued from Page 24)

was predicated on attractive terms so as to win quick customer acceptance, got under way, steps were immediately taken to procure industrial business on the off-peak and interruptible basis to fill in the valley which would have resulted during the summer.

A special rate for water heating and steam generation available for the period April 1 to October 31 facilitated the acquisition of steam boiler load from industrials and office buildings to such an extent that the volume of gas sold under this classification during the summer of 1935 will be four times as great as for the corresponding period of the previous year. Only a small portion of this field has been exhausted and there is still opportunity to expand sales under the same classification to apartment buildings in the outlying residential territory.

Through comparatively short main extensions natural gas has been made accessible to a few large boiler plants where it is in use under contracts which provide for the customer to change to a stand-by fuel upon 30 minutes notice. In a similar manner, natural gas has been accepted by large mills for use as a fuel in metallurgical processes where, by reason of collateral advantages and provisions for a slightly longer notice to the customer before interrupting service, it has been possible to obtain considerably higher prices for the gas than would have been the case had all of the summer surplus been consumed under boilers.

A third avenue for summer use has been opened by adopting a form of rate for manufacturers that restricts the call for gas during specified hours on Sundays and holidays in the peak period and requires that maximum daily demands upon which bills are computed be determined in the peak period only. This classification has been effective in improving summer send-out to firms who are engaged in a seasonable business and to others where gas must be obtained for crude heating operations at a rather low price in order to meet the cost of competing fuels.

Through the measures indicated, the winter demand built up by a very active house heating campaign has been offset.

An industrial sales organization trained to stress the form value of gas was found admirably fitted, when freed from the necessity of battling the price obstacle, to convince prospective industrial customers that the interruptible service feature is not an insurmountable handicap.

This example seems to furnish ample evidence that strength of purpose, trained personnel and satisfactory customer relationship, once developed to meet any given phase of a sales condition may be readily and advantageously turned to meet a changed situation provided that the plan to be followed is founded upon a solid economic basis and that there is proper harmony existing between management, junior executives, and employees.

Grand Rapids Gas Light Co. Constructing All-Gas-Wonder-House

AN all-gas-wonder-house is now being constructed by the Grand Rapids (Mich.) Gas Light Co. in East Grand Rapids, that upon completion about November 1, will demonstrate gas to the people of the community in its most up to date setting.

The house is the first pre-fabricated steel house of its type to be built in Michigan and is of the same type as those displayed at the Century of Progress Exhibition. Gas will be used in the home in every application where it can do the job best, that is in cooking, hot water heating, househeating, and air-conditioning, refrigeration, laundry work and incineration.

Grand Rapids furniture and home equipment firms will also utilize the home for display purposes. Local labor and materials are being used in building the home, with the firm of Owen-Ames-Kimball company being the contractors.

The home will be on public display for a period of one year. It is a fire- and termite-proof building and is completely insulated against heat, cold and noise. The kitchen was especially designed by Miss Mabel Claire Atwood, home service director of the company. Among other members of the company figuring prominently in the construction of the home are Albert G. Schroder, secretary, Guy D. Halladay, sales manager and B. T. Franck, supervisor of sales of American Light & Traction, the parent company.

Small Compressor for Truck Mounting Produced by Worthington

Worthington Pump & Machinery Corp., Harrison, N.J., announces a small Aero-2-stage compressor which can be rigidly mounted on a truck frame. The compressor is driven by the truck engine and belt tension is maintained by a ball bearing idler. It is a three-cylinder, air-cooled unit with air-cooled intercooler, equipped with Timkin roller main bearings, force-feed filtered lubrication and feather valves.

The compressor is mounted directly behind the cab, leaving the rest of the truck bed free and mountings can be adapted to any standard type of truck chassis.

Moberly, Mo., Gets Natural Gas

Natural gas was turned into the mains of Moberly, Mo., in September following the completion of change-over work begun in August. Missouri Power & Light Co., headquartering in Kansas City, Mo., is the distributing company, drawing the Moberly supply from the Panhandle Eastern Pipe Line Co. line at the city limits.

No. 3 of a Series

Reprinted from "In Gear"—the Pacific Gas and Electric Company's plan for united industry cooperation during 1935.

P·G·and E·

ADVERTISING POLICY

Market stimulation rather than direct merchandising is the broad purpose of P. G. and E. advertising.

It seeks to create public interest in the advantages of modern gas and electric service and desire for the equipment with which to realize those benefits.

For example, we sell gas heating by repeated exposition of the efficiency, cleanliness, etc., of this method and leave to manufacturers and dealers the exploitation of specific makes of appliances, their prices and individual excellence.

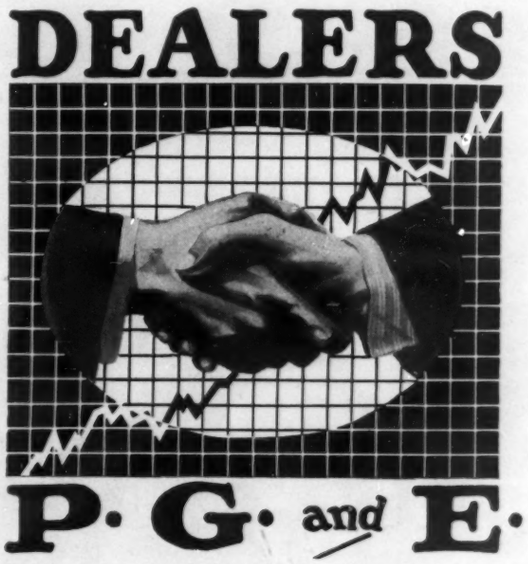
The Company's advertising is educational, informative and stimulative in its varied appeal to the buying public. It is designed to lay the solid groundwork of customer acceptance upon which the salesmen of the Company and dealers carry forward their campaign for actual sales.

The essence of our plan is coordinated activity, the gearing of the Company's promotional efforts with those of the gas and electric appliance societies and with the advertising of manufacturers and dealers.

News publicity dealing with the value and use of various appliances will be continued. This supplementary publicity first was systematically distributed in 1931 and the amount published by newspapers since then has fully demonstrated its value.

The advertising department will continue, also, its cooperating in the promotion of cooking schools and home economics demonstrations.

The Company's own publication "P. G. & E. Progress", published monthly, goes to approximately 500,000 customers. "Progress" conducts monthly contests intended to encourage appliance use and carries in its column a persistent general sales appeal to all users of gas and electricity.



PACIFIC GAS AND ELECTRIC COMPANY

Owned, Operated, Managed by Californians

WG 210-1035

Grove Regulator Announced by Renco, Inc.

RENCO, Inc., engineering firm with headquarters at 116 New Montgomery Street, San Francisco, Calif., announces introduction of the new Grove regulator for use in the gas industry. The device differs from conventional type regulators in that it uses different means than a weight or spring for applying power to the diaphragm. A dome filled with gas at any desired pressure furnishes the power for the diaphragm. The regulator may be set for a desired pressure by allowing some of the inlet pressure gas to pass the dome by opening the needle valves. These valves are then closed, sealing the dome until a new delivery pressure is desired.

According to the manufacturer, the new regulator will handle any inlet pressure from 10 pounds upwards and is recommended for reducing high pressure differentials in a single stage without freezing. Some of the present installations are reducing well pressures in excess of 2,000 pounds to pipe line delivery pressures.

Washington G. & E. Service Makes Hit with Convention

WASHINGTON Gas & Electric Co.'s Centralia Division, although located in a community where coal is delivered for $3.00 a ton and wood for $3.00 a cord, does not hesitate to go after special fuel jobs whenever they develop in its territory. According to E. J. Ludeman, commercial manager for the company, the Centralia Division recently secured the cooking and water heating load of the Assemblies of God Convention, held annually at the Fairgrounds between Chehalic and Centralia, attendance running to 5,000. The two-week convention represented a gas load of 241,000 cubic feet.

There were 14,502 meals served from the main dining room at a gas cost per meal of $.0066. A total of 16,092 short order meals were also served, at an average gas cost of $.0052 per meal. Equipment for shower baths and laundry room water heating gas was installed, the actual cost per bath for hot water, at 7 gallons per bath, being $.0113. The convention committee was so well sold on gas that the entire gas equipment installation was purchased for use at future annual meetings of the organization.

Piedras Negras, Mexico, to Get Natural Gas from Texas

Compania Nacional de Gas, S. A., Piedras Negras, Coahuila, Mexico, has completed arrangements for the construction of a natural gas distribution system in Piedras Negras, according to A. Flores, manager. Gas will be piped from wells in Maverick County, Texas, located about 16 miles northeast of Eagle Pass, the transmission line to cross the Rio Grande. This pipe line will be the second one running from Texas to Mexico, the other being from the gas fields near Laredo to Monterrey.

Piedras Negras has a population of about 22,000 inhabitants and has four industries which the company hopes to convert to gas fuel. It is also the company's plan to build a plant for generating electricity.

Superior Water, Power and Light Co. Executive Changes

Changes in executive personnel in the Superior (Wis.) Water, Light and Power Co. which took place recently are as follows, according to W. H. Winslow, vice-president:

M. L. Hibbard, formerly president and general manager, resigned the latter office but continues as president.

H. J. Underhill, formerly Duluth district manager for Minnesota Power and Light Co., becomes vice-president and general manager.

W. C. Lounsbury, manager, resigned to take an executive position with the Minnesota Power and Light Co.

Walter H. Canney to Represent American Gas Products

Walter H. Canney, has been appointed representative of American Gas Products Corp. in the northwestern territory, covering Minnesota, North and South Dakota and northern Wisconsin. He will make his headquarters in St. Paul and will operate under the supervision of T. E. Grant and A. I. Wallace of the Chicago office of American Gas Products. Prior to appointment he had seen service with the house heating departments of The Peoples Gas Light & Coke Co. and the Public Service Co. of Colorado.

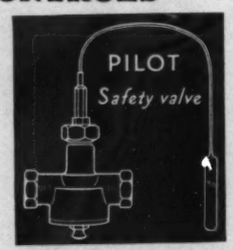
Canadian Western Builds Annex

Canadian Western Natural Gas, Light, Heat & Power Co., Ltd., Calgary, Alberta, is building a one-story 25x65 ft. annex. The ground floor will be used for additional office space and the basement will consist of a small auditorium for home service lectures and company asesmblies. The auditorium will be equipped with all modern gas appliances for demonstration and lecture purposes.

BUILD YOUR HOUSEHEATING LOAD WITH KLIXON CONTROLS

These two advanced Klixon devices give exact automatic temperature control and assure positive pilot protection for your gas-fired space heaters . . . provide sales features that make it easy to sell gas heating.

Write today for descriptive bulletins.



SPENCER THERMOSTAT COMPANY
Unit of Metals & Controls Corporation
34 FOREST STREET • ATTLEBORO, MASSACHUSETTS

Western Gas
is compressed by
COOPER-BESSEMERS
50 to 1600 horsepower

THE COOPER-BESSEMER CORPORATION
640 East 61st St. Los Angeles, Calif.
PLANTS: Mt. Vernon, Ohio — Grove City, Pa.

Orifice Plates Salvaged by Daniel Orifice Fitting

The Daniel Orifice Fitting Co. of Los Angeles is featuring a serice whereby the conventional type of ¼-inch thickness orifice

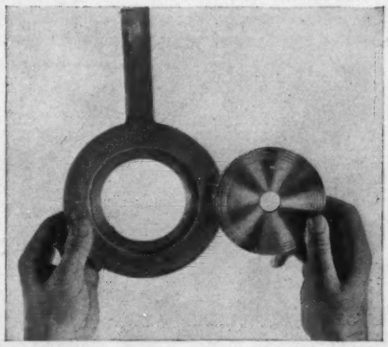


plate that has been rebored so that the ratio is too large for further use, can be converted into a plate holder and used again by inserting the Daniel stainless steel wafer plate. With this method old plates that are usually junked can be salvaged for re-use.

Standard G. and E. Files Petition Under Reorganization Statutes

John J. O'Brien, president of Standard Gas and Electric Co., announced that on September 27, 1935, a petition was filed by the company in the District Court of the United States for the District of Delaware under Section 77B of the federal statutes relating to the reorganization of corporations, and an order was entered by the court continuing the company in possession.

With this petition the company filed a copy of its plan for the extension to October 1, 1940, of the maturity of its $14,823,000 20-year six per cent gold notes and its $9,826,500 six per cent convertible gold notes, all due October 1, 1935, stating in its petition its inability, although solvent, to meet these debts as they mature, and reciting that the holders of the majority in the amount of the notes due agreed to the extension plan. The court authorized the company to continue the solicitation of the deposit of notes under the plan.

Roy E. Tunwall Passes

Roy E. Tunwall, former superintendent of the Peoples Light Co. gas plant at Davenport, Iowa, died August 30. Mr. Tunwall was superintendent of the gas plant for a number of years and was in charge of the change-over to natural gas in Davenport. He was a member of the Executive Council of the Mid-West Gas Association.

J. W. Carpenter Joins Republic Steel

John W. Carpenter, for 16 years Cleveland, Ohio, district sales manager for Otis Steel Co., has become assistant manager of sales, sheet and strip division, for Republic Steel Corp., Youngstown, Ohio, according to N. J. Clarke, Republic's vice-president in charge of sales.

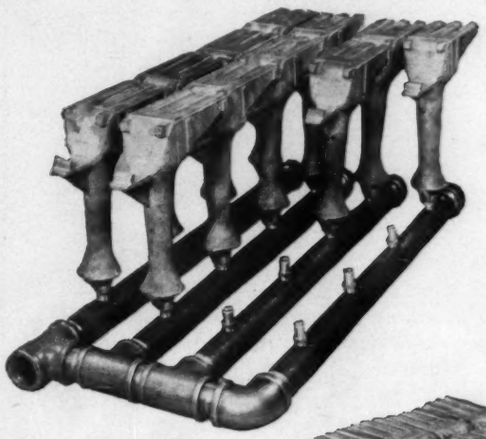
You bet it's flexible!

The N.G.E. Type W Gas Burner

for square or rectangular furnaces

The Type W effectively incorporates the Venturi air inspirating and mixing principle in an ideal upshot burner for heating boiler installations at low cost. It consists primarily of a cast iron burner head with drilled ports and the correctly designed Venturi tube.

The Type W is adaptable to all types of cast iron or steel boilers with square or rectangular fire boxes. It has excellent flame characteristics from 2" water column to 2 lbs. per square inch pressure. Burning quietly at all rates of firing, it will not "flutter" or vibrate; nor will it candle or back fire. Requires little or no attention.

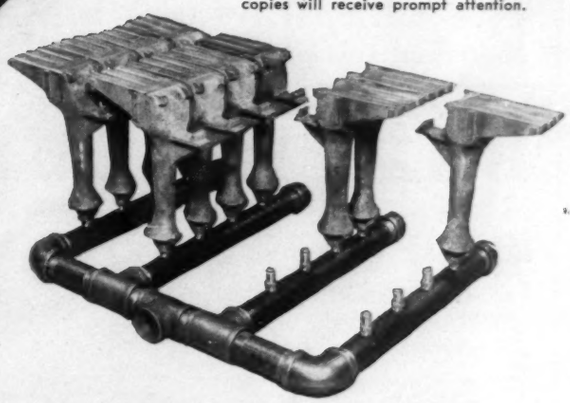


New Bulletin on
Commercial Heating

A new N.G.E. Bulletin, just off the press, gives informative instruction on all commercial heating conversion problems as well as proper applications of burner equipment to such installations. It will be indispensable to all utility and appliance men in the field. Your request for copies will receive prompt attention.

A PERFECT SET-UP FOR MANIFOLDING

As illustrated, above and at right, the ease with which the Type W may be manifolded is readily apparent. As a result installation alterations to firebox are held to a minimum. The Type W is suitable to any type of control. This N.G.E. Burner is described and illustrated in detail in the new N.G.E. Commercial Heating Bulletin.



NATURAL GAS EQUIPMENT INC.

1123 Harrison St., San Francisco — **Petroleum Securities Bldg., Los Angeles** — **Arizona Dist. Crane Co.**

LOOK TO THE PIONEERS FOR CONTINUED LEADERSHIP

Minimum Power Costs ASSURED

By using both gas and gasoline for fuel, power users profit through favorable price fluctuations and cut fuel bills to minimum. The Ensign Carburetor uses both fuels, changing instantly from one to the other without shutting down.

Ask for particulars.

Ensign Carburetor Company, Ltd.

Pioneers in the Development of Precision Carburetting Equipment

P. O. Box 606 (Los Angeles Suburb)
Huntington Park, California

Uses Gas and Gasoline!

ENSIGN COMBINATION GAS AND GASOLINE CARBURETOR

Compact, Tamper-Proof Sturdy, Indestructible

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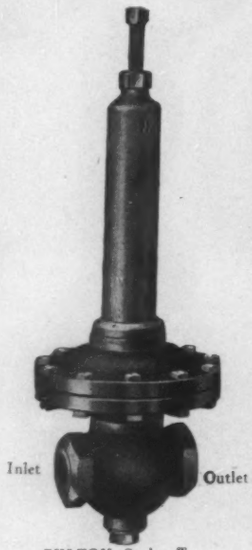


FULTON Spring-Type High Pressure REGULATOR

WHERE high pressure on a line makes it inadvisable to operate with a single regulator between line and user, the Fulton Spring-Type High Pressure Regulator serves perfectly. Inlet pressures up to 300 pounds are reduced to any desired pressure between 10 and 50 pounds. Heavily and strongly built, yet this regulator is easy and economical to transport because of its compactness. It can be quickly installed and is very dependable in use. For exposed and out-of-the-way locations it is especially desirable because less subject to meddling than other types of regulators. Descriptive leaflet No. 118 is available. Catalog of Chaplin-Fulton regulators—40 types, for all requirements of gas control —will be mailed on request.

The Chaplin-Fulton Mfg. Company

28-40 Penn Avenue **Pittsburgh, Pa.**

BAKERY BURNERS

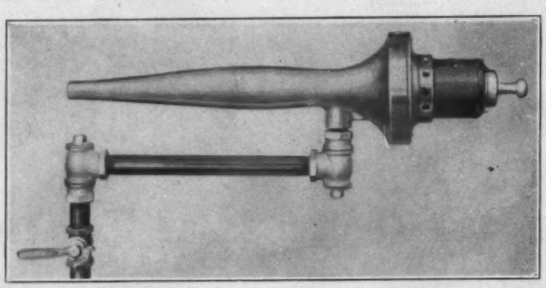
MOTOR-BLOWER and ATMOSPHERIC TYPES

FOR ALL OVENS

are most powerful and beautiful as originated by

NEMEC COMBUSTION ENGINEERS

WHITTIER, CALIF.



REFRACTORIES

GENERAL CERAMICS COMPANY

• REFRACTORIES •

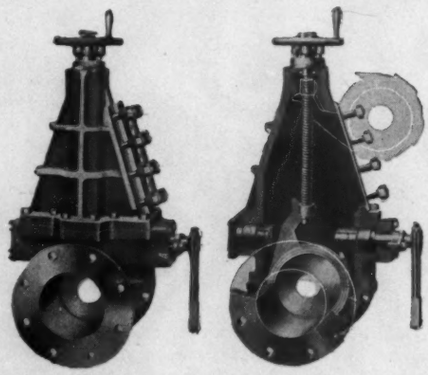
For Conversion Burners, Circulating Heaters, etc.

Because they are uniformly accurate, strong, and dependable in every way, General Ceramics Refractories are used by most of the leading manufacturers of gas heating appliances. • Our engineers will gladly cooperate with you.

General Ceramics Company, 30 Rockefeller Plaza, New York

Robinson Orifice Fitting Co. Announces New Fitting

ROBINSON Orifice Fitting Co., Los Angeles, has placed on the market its recently developed type E orifice fitting. Speed of operation and simplicity of design are said to be features of the new fitting. The main operating mechanism is entirely encased in the upper chamber and consists of



a heavy stationary screw and a follower nut, pivoted to the orifice plate carrier. This device forces the carrier into position in the lower seats and lifts it completely out of the upper chamber for inspecting or changing plates.

The orifice plate is sealed both upstream and downstream by a stainless steel spring diaphragm and the bore is flush from both faces of the plate. A full-floating plug valve is lubricated with an equalized pressure system. The fitting has only two packing glands which may both be packed under pressure. An indicator shows when the orifice plate is positioned in the pipe line bore, and the plate can be locked in place. Valve seats are covered in both open and closed positions.

I. F. S. to Add New Plant and 24-Mile Line

To utilize increased production at the Mountain View field, South San Joaquin Valley, the Industrial Fuel Supply Co., Los Angeles, will soon begin installation of a 12-unit compressor plant and 24 miles of 10-inch line running southeast from the field to the Southern Fuel Co.'s 26-inch line, delivering gas to the Los Angeles metropolitan area.

Washtenaw Gas Co. Adopts Special Domestic Rate

Washtenaw Gas Co. of Ann Arbor, Michigan, serving manufactured gas, recently adopted a new optional rate available only to domestic customers who use gas for automatic water heating and/or refrigeration. The rate consists of a monthly meter charge of 30c; first 2,000 cu. ft., $1.20 per thousand; all over 2,000 cu. ft., 70c per thousand. Customers must make application for the rate.

Gas Grant Approved

A grant of $5,727 in Federal funds, for the installation of a natural gas distribution system at Hesston, Kan., to be served from a proposed transmission line of the Inland Pipe Line Co., has been approved by the President.

Sales Experiences in Small Towns

(Continued from Page 28)

to the maximum of its possibilities in any reasonable length of time, that our sales policy must be revised in order to more effectively meet this situation.

The objective then was to devise a plan that would reasonably accomplish the following:

1. To enable families in moderate circumstances to enjoy the advantages of natural gas for heating under a payment plan within their budget. Also to reach the rental class, representing from 30 per cent to 40 per cent of the available market.

2. To permit the operating company to realize on its investment in equipment within a reasonable period of time.

The usual rental plan was considered as meeting the No. 1 objective and in order to meet the No. 2 objective a combination of the rental and trial period plan was adopted. This trial-rental plan, as applying to the sale of conversion burners and water heaters for the year 1935, is as follows:

The plan contemplates the full satisfaction of all sales within a period of three years.

(a) Rental or Trial Period

The rental or trial period to be for one year and in the case of conversion burners to end on July 1, 1936.

During the first year's heating season customer to pay monthly rental charge of $1.00 per month and at any time during this period the company will upon request of customer remove the equipment, the customer to be obligated only to the extent of paying in full for gas used and the full rental charges which may have accrued.

(b) Customer Purchase Option

At any time during the rental or first year's trial period, customer may at his option require the company to remove the equipment or he may purchase the same under the standard prices and terms.

Customer to exercise his option to purchase must do so prior to the termination of the rental period; otherwise company may remove burner and equipment.

All rental payments made by the customer during the trial period will be allowed as a credit on the down payment price.

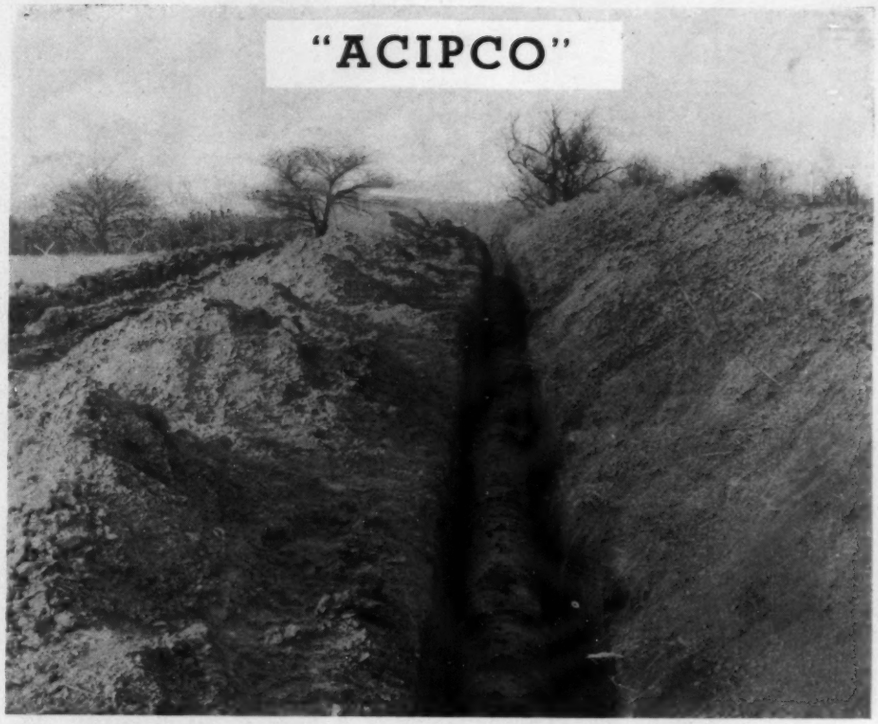
Conversion Burners

(a) Sales to be made only to customers having approved credit standing.

(b) All sales under this plan must be made only upon the execution by the customer of our special contract form covering this plan and approved by the district manager.

(c) The rental charge under the trial period plan for all installations made after September 1 shall begin on the first of the month next succeeding the month in which the installation was made and shall continue until customer elects to purchase the equipment. In event customer does not exercise his option to purchase prior to July 1, 1936, then company may remove said burner and equipment from customer's premises.

For installations made prior to Septem-



Section of a 15,000-foot line of 18-inch Mono-Cast Doublex Simplex Cast Iron Pipe conveying gas at an operating pressure of 75 pounds. Doublex Simplex Pipe is setting new standards for high pressure gas transmission and distribution. For literature write American Cast Iron Pipe Co., Birmingham, Ala.

• TO THE GAS INDUSTRY *Fluor*

offers a complete designing, engineering and construction service, embracing all utility building programs. Our organization in undertaking such building projects assumes full responsibility for complete construction and works in conjunction and cooperation with company engineers.

FLUOR CORPORATION
• LTD •

909 McCormick Bldg. Chicago, Illinois
1406 Esperson Bldg. Houston, Texas
909 East 59th St., Los Angeles, Calif.
220 East 42nd St. New York City, N. Y.
3162 Edwards St. Alton, Ill.
719 McBirney Bldg. Tulsa, Okla.

GOODMAN
USED SINCE 1897
2" HANDLE & LOCKING SLEEVE
GAS MAIN STOPPER

The Goodman Stopper

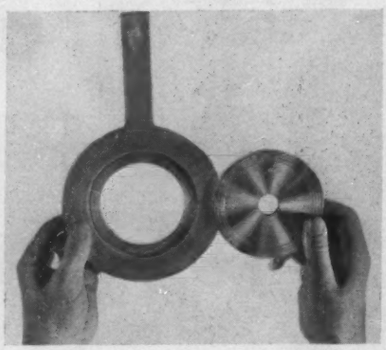
The Reliable Shut-off for Street Mains

Equipped with Improved Patented Locking Sleeve, which locks both handles to the pipe. Stopper cannot slip. Gas cannot pass.

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, N. Y.

Pac. Coast Rep.: C. B. Babcock Co.
135 Bluxome Street
San Francisco, California

STANDARDIZE



WITH DANIEL WAFER PLATES

The new Daniel Wafer Plate is interchangeable in all Daniel Orifice Fittings, in ordinary orifice flanges, and in some of the other types. A simple machine operation converts the old conventional orifice plate or the plate carrier into a plate holder, using the Daniel Wafer Plate. This permits complete standardization and saves you time and money. Write for full details.

Daniel Orifice Fitting Company
2719 Elm St. Phone CA 9228 Los Angeles, Calif.

For Any Conditions

NO-OX-ID and NO-OX-ID-IZED Wrapper have high long-time resistance to moisture penetration and soil stresses. They are supplied in correct combinations to cope with any corrosive conditions. Recommendations and estimates supplied gladly.

DEARBORN CHEMICAL COMPANY
Los Angeles: 807 Mateo Street, Phone TRinity 3385
San Francisco: 421 Bryant St., Phone SUtter 8688

NO-OX-ID IRON-RUST TRADE MARK
The Original Rust Preventive

ber 1, the rental charge shall not apply until October 1.

This plan was adopted and made effective as of May 15, 1935. Since that time or up to July 1, the sales of conversion burners have increased 411.1 per cent and the sales of water heaters 669.8 per cent over the corresponding period of the year previous under the usual installment selling plan. Our experience so far indicates that this plan will accomplish all and quite likely more than we had anticipated and will very satisfactorily meet the objectives we had in mind and which we started out to attain.

Under this plan two types of burners are sold, the standard blue flame burner with full automatic control and the luminous flame burner hand controlled, the selling price being approximately $95.00 for the full automatic and $37.50 for the hand control job.

Selling Organization

During the first two and one-half year period immediately following the introduction of natural gas, experienced salesmen were employed, one salesman to a contiguous group of usually 6 to 8 towns. Owing to their widely scattered location and the small size of the towns, the cost of maintaining an independent sales organization soon becomes excessively large in relation to the available market. This critical point was reached in our situation in about three years.

This period probably could have been shortened had conditions been normal. With its market in the agricultural section where the depression was keenly felt and where the acceptance of a new kind of fuel meant a departure from established habits and customs, the results attained evidence the importance of live, aggressive salesmanship during this early development period.

At the present time our entire sales and load-building program is carried on through the regular operating organization with the cooperation of local dealers.

American Light & Traction Co. Elects New Officers

At a recent election of officers of the American Light & Traction Co., Chicago, the following changes took place: A. P. Lathrop retired as chairman of the board and R. B. Brown as president of the company, the latter to devote all his time to the company's Wisconsin properties, C. S. McCain was elected president and B. J. Denman vice-president and general manager.

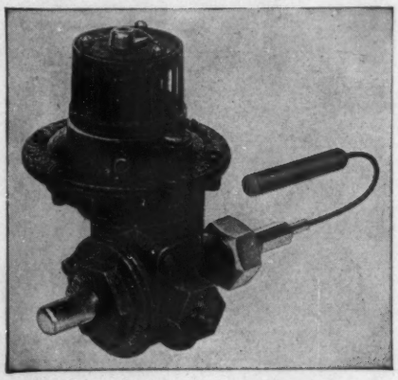
C. R. Henderson, since 1927 vice-president and general manager of the Washtenaw Gas Co., was appointed president of the subsidiary company, succeeding C. N. Chubb, who recently accepted a post with the San Antonio (Texas) Public Service Co.

"Managers Club" Membership Is Reward for Sales Record

A "managers club", membership in which is open to all salesmen and employees of the Interstate Power Co., Dubuque, Iowa, who make an outstanding record in the current gas range and water heater sales campaign, has been formed. A gold plated pin is awarded each member upon admittance to the club.

New Controls for Space Heaters Announced by Spencer Thermostat

SPENCER Thermostat Co., Attleboro, Mass., announces a new control designed to combine automatic room temperature control and protection against pilot flame failure in a single unit. It is claimed that the new



control is applicable to any gas space heater. The heat of the pilot flame expands a thermal bulb filled with inert gas which acts on an over-centered Klixon snap-acting disk holding the pilot safety valve open. When the pilot flame goes out, the bulb cools and the Klixon disk snaps the valve closed. The pilot safety valve must then be reset manually.

The thermostatic element consists of a corrugated disc which operates a small snap-acting valve in the bleed line of a diaphragm gas valve. Piping the unit into the supply line to the appliance and mounting it directly on top of the diaphragm valve, makes possible automatic temperature regulation. For wall mounting the thermostat unit is provided separate from the diaphragm valve, and connection made with small tubing.

Consolidated Gas Utilities Co. Plan for Reorganization Approved

Plan of reorganization of the Consolidated Gas Utilities Co., Oklahoma City, Okla., was recently approved in federal court. The new corporation will be known as the Consolidated Gas Utilities Corp., and will take over the assets of the old company and assume the outstanding funded debt consisting of $8,285,000 first mortgage 6 per cent bonds.

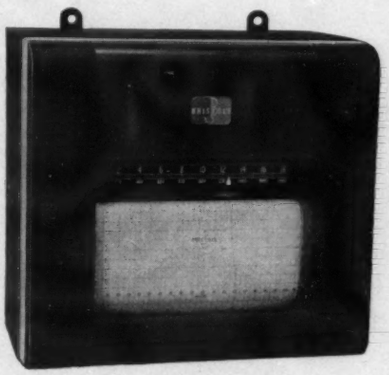
The first board of directors of the reorganized company approved by the court are the following: William W. Battles, E. G. Diefenbach, Arthur M. Lamport, Birger L. Johnson, Logan W. Cary, Robert LeRoy and Charles F. Park, Jr. Officers have not as yet been elected.

Vermillion, S. D., to be Supplied Natural Gas

Northern Natural Gas Co. is constructing 10 miles of 6-inch line from its Sioux Falls line to Vermillion, South Dakota, where natural gas is to be supplied the city (population approximately 2,850) by the recently organized Vermillion Natural Gas Co. Gas was to be turned on in the latter part of September.

Bristol Announces New Potentiometer Wide-Strip Pyrometer

BRISTOL CO., Waterbury, Conn., has brought out a new potentiometer Wide-Strip Pyrometer, available in single record, multiple record and recorder-controller types. The slide-wire contact and recording pen



are mounted on the same carriage to eliminate errors due to backlash and lost motion, no clearance is required between the pointer and the chopper arms and the instrument is claimed to be capable of measuring deflections of less than 1/1000 inch.

To maintain emf balance in the potentiometer system, the slide-wire contact and recording pen are adjusted by a stainless steel lead screw which is driven by an electric motor with galvanometer-controlled contacts. No friction clutches nor ratchet mechanisms are used. The new unit records on a 12¼-inch chart, has a 1¼-inch indicating scale, and is housed in a convertible moisture-, fume- and dust-proof case.

Staff Changes for Southern Calif. Gas Co. Announced

EFFECTIVE in September, a number of personnel changes were announced for the Southern California Gas Co. system, including the following:

William Hand, office engineer for Lee Holtz, general superintendent of manufacture and distribution, has been transferred to the Northern Division headquarters in Glendale as sales supervisor. B. E. Embry, formerly office engineer for H. P. George, general superintendent of production and transmission, assumes Mr. Hand's former duties, while C. E. Pickup has been transferred from Kettleman Hills as office engineer for Mr. George. Robert Few, measurement engineer in the Kern Division is now located at Kettleman Hills in the post of division engineer, formerly held by Mr. Pickup.

M. J. Binckley, office engineer for William Moeller, Jr., vice-president in charge of natural gas production and transmission, is now located at Taft as division engineer for the Kern division, while W. K. Dodd, formerly at Taft as division engineer, holds a similar position at Ventura. Grove Lawrence, division engineer at Ventura, is now office engineer for Mr. Moeller.

J. Riegle, assistant to L. M. Spencer, geologist for Southern California Gas Co. at Los Angeles, has been transferred to field headquarters at Taft as assistant production engineer.

Combines Table Top Beauty with Kitchen-Heater Utility and Convenience

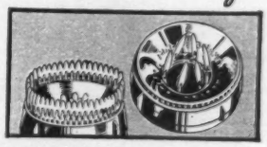
WEDGEWOOD'S MASTERPIECE Expresses A NEW TEMPO in modern gas range building

"OVER 1,000,000 SATISFIED WEDGEWOOD USERS IN THE WEST"

MODEL 1022 BK
1936 Model

EXTRA WORK SPACE
Plenty of convenient, waist-height space for working and cooking. The oven-top is thoroughly insulated. With the drop-top lowered unlimited space is gained for the preliminary mealtime jobs.

Eclipsing all previous triumphs in gas range designing, this newest Wedgewood instantly wins the acclaim of all who see it. Kitchens can be heated with both circulated or radiated gas heat developed by dual-burners within the extra-large firebox. The famous Wedgewood Closed-Top is more spacious than ever. Among the 16 Glorious Features of the Wedgewood Masterpiece is a remarkable new type oven regulator which gives broiling and toasting heats independent of the oven thermostat.



SPEED-*plus*-Simmer Burners
Provides two separate flames for waterless cooking and for better, more economical cooking.

ASTOGRIL BROILER
Seals in tasty, healthful, natural juices by searing on both sides at once. Made of thick cast-aluminum.

JAMES GRAHAM MANUFACTURING CO.
San Francisco • Newark • Los Angeles, Calif. • Portland, Oregon

Mid-West Gas Connecting to New Wells

Following recent completion of drilling operations northeast of Neodesha, the Mid-West Gas Corp., Neodesha, Kan., is constructing some 4 miles of pipe line from the field to its compressor station at Neodesha.

Sale of Kansas Gas Property

Kansas Corporation Commission has approved the sale of the Kingman County Gas Co., Kingman, Kan., to the Kansas Power & Light Co.

Portland Gas & Coke New Oregon City Office

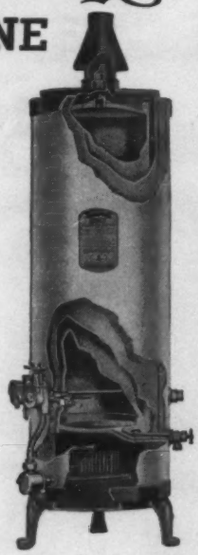
Portland Gas & Coke Co. has moved into its new Oregon City office at 814 Main St. Opening ceremonies featured the inauguration of a canning contest, a cooking and baking demonstration and the participation of 23 local dealers in the appliance display.

The new office personnel has been increased from seven to eleven members with C. W. Nash, district manager, and David H. Gowans, Jr., sales supervisor.

New Branch for So. Cal. Gas

Southern California Gas Co. recently opened a branch office at 255 South Western Ave., Los Angeles.

Welsbach
HOTZONE
Self-action storage gas water heaters



Approved by A. G. A. Laboratory

Heaters are made in all domestic sizes with 300 lb. test galvanized or Everdur tank.

Write for Details

WELSBACH COMPANY
Gloucester City, N. J.
SAN FRANCISCO, CALIF. CHICAGO, ILL.

buy *this* gas range because it has Robertshaw oven-heat-control!" That, in effect, is what this lively little figure shouts when you hang him on your Robertshaw-equipped gas ranges. He ties right up with Robertshaw national advertising—running now.

He'll help you sell. He's a price tag, too. Write for a quantity.

ROBERTSHAW THERMOSTAT COMPANY
YOUNGWOOD, PA.

Service—Survey Work on Houston Natural's System

USING 10 crews of three men each, Houston Natural Gas Co. about a year ago began changing over indexes on its domestic meters to equip them with direct-reading Metric dials. More than 18,000 meters have been changed over to date, according to R. M. Robertson, general superintendent of the company. Future index changes are being handled as shop routine.

Crews handling the above work included an appliance adjustor, a meter painter and a customer contact man. The latter made an appliance survey while the meter work proceeded, and on this plan the crews averaged 30 jobs a day.

Appliance markets shown by the survey are of considerable interest. On the basis of 14,950 inspections, prospects were uncovered for 1,194 ranges, 382 space heaters, 957 refrigerators, and 849 water heaters.

To capitalize upon the customer services rendered by its efficient service crews, the company makes a regular mailing to new customers, on a four-page letter head. The first page is a brief letter expressing the hope that installation and connection work and appliance adjustment have been handled satisfactorily, while inside pages of the letter show photographs of service crews and an illustration of the new "easy-to-read" meter dials.

Campaign on Heavy Duty Gas Cooking Equipment

FROM October 15 to January 15 a campaign on hotel and restaurant equipment will be jointly conducted by Southern California Gas Co., Southern Counties Gas Co., and Los Angeles Gas and Electric Corp., with a committee made up of Geo. H. Heckler, D. L. Leahy, and Joe Del Francia representing the companies respectively. Only approved ranges equipped with insulated ovens and oven heat controls will be eligible for gas company financing, which is a feature of the campaign. Direct sales will be handled by a number of large supply houses, and the gas companies will take over purchase contracts where desired.

Bake ovens, deep fat fryers, salamanders, extensions, and all accessories will be included in the drive.

Allowances running to 25 per cent of retail list price will be made on old equipment. The trade-ins may act as down payment, and must be turned in to the gas company. Terms are 18 months, with 6 per cent annual carrying charge. Sales must be made on list prices to be eligible for the financing feature. Company representatives will visit premises of all purchasers to make a check on meter sizes and house lines.

A similar four-month campaign ending March 1 of this year sold 929 sections of hotel and restaurant ranges.

More Gas Equipment at Mare Island Power Plant

Pacific Gas and Electric Co. in September completed a 12-inch line to the Mare Island power plant of the Navy Department, where additional gas equipment has recently been installed.

The Navy Department ordered four 1,000 h.p. boilers installed about three years ago with combination gas and oil burners, but did not accept the installation until April of 1935. Installation of piping and controls for gas was held up until the boilers were accepted, and a contract for this work is just being completed.

Gas burners for two additional 1,000 h.p. boilers in the power plant will be installed some time in the future when these boilers are reset to secure additional capacity.

Home Study Course on Natural Gas Fee Reduced at U. of Kan.

Reduction by 10 per cent of enrollment fee for the Home Study Course on Natural Gas at the University of Kansas, conducted under the auspices of the Natural Gas Department of the A. G. A., is announced by H. G. Ingham, director of the university's Extension Division. This reduces the fee to $54 for A. G. A. members and employees of member companies. For non-members the fee becomes $72 when paid in advance or $74.50 on the installment plan.

Active Construction Program for Southern Calif. Gas Co.

A number of projects are on the Southern California Gas Co.'s calendar for current or early construction.

Capacity of the system between Kettleman Hills, Lemoore Junction and Fresno is being increased with 5 miles of 10-inch and 16 miles of 8-inch new line construction.

From compressor station No. 43 at Buena Vista Hills, a 3½-mile 12-inch line was being laid last month northerly to the company's Bakersfield transmission line. In conjunction with this project, additional cooling facilities are being installed at Station 43, consisting of one new tower and an extension to the present cooling tower.

It is also proposed to lay a line from the Semitropic-Buttonwillow district, San Joaquin Valley, westerly to connect with the 20- and 26-inch Kettleman-Taft transmission system. This line will be of 12-inch pipe, about 11 miles in length.

G. C. McLaughlin Named District Manager

George C. McLaughlin, since 1922 serving in various executive capacities for the Northern Indiana Public Service Co., Hammond, Ind., has been made manager of the company's Plymouth district, according to Dean H. Mitchell, vice-president and general manager. Mr. Hammond succeeds M. L. Burke who died several months ago.

"MODERNIZE as you repair"

THE SPRAGUE METER COMPANY

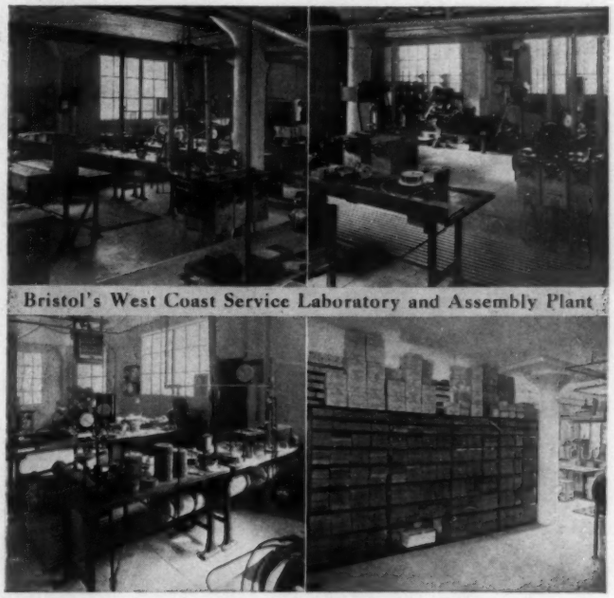
BRIDGEPORT, CONN.

Los Angeles, Calif. San Francisco, Calif.

Davenport, Iowa. Houston, Texas.

★

RECONDITION *your* Old Recorders Now



Bristol's West Coast Service Laboratory and Assembly Plant

DON'T WAIT, as one company did, until the recording pens of your faithful old Bristol's Recorders are worn down to a blunt edge by long years of service. Recondition them now. Give them new life to serve you for many years to come.

If your processing today is carried out at temperatures or pressures different from the ranges for which your Bristol's were originally installed, re-standardization is recommended.

The fee for this service is so modest that it will appeal to you. Just pack recorders carefully and ship to 311 Minna St., San Francisco. Send order to nearest branch office.

THE BRISTOL COMPANY

Branch Offices: Rialto Bldg., San Francisco . . 747 Warehouse Street, Los Angeles . . Branch Factory: 311 Minna Street, San Francisco

BRISTOL'S

TRADE MARK REG. U. S. PAT. OFF.

PIONEERS IN PROCESS CONTROL SINCE 1889

The Accordion Packing Ring

Made for Superheated Steam at Any Pressure Up to 1000° Fahr.

The laminations in Accordion Packing Rings are joined by folds which make it possible to use long, selected fibres and eliminate the need of cement and fillers which might burn out at high temperatures.

A leak-proof terraced lap incorporated in the laminations makes it possible to spring the ring around a stem without having to cut the ring, thus making it extremely convenient for quick installations.

One of the principal uses of Accordion Packing Rings are on throttle and control valves of steam turbines and on main steam line gate valves.

For further information, write for Technical Bulletin No. 390.

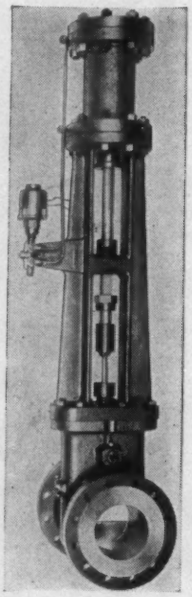
THE TEXACONE COMPANY
INCORPORATED IN TEXAS
MANUFACTURERS OF
High Pressure Packing and Specialties

2007-9 W. Commerce DALLAS, TEXAS
P. O. Box 4186

Pacific Coast Address:
923 E. Third Street, Los Angeles, California

Automatic Adjustable Orifice Developed by Bailey Meter Co.

BAILEY Meter Co., Cleveland, Ohio, announces the development of an adjustable orifice which shifts its position automatically with major changes in rate of flow. It resembles a hydraulically operated gate valve but has a sharp edged orifice segment. The stroke of the hydraulic piston is limited by adjustable stops so that the gate rests in one of two definite positions. Hydraulic pressure is admitted through a solenoid operated valve, which responds to contacts made in the recording meter, to one or the other end of the piston while the opposite end is opened to drain.



Bailey Automatic Adjustable Orifice

When the differential pressure across the orifice reaches the maximum or minimum for which it has been set, a contactor in the meter casing energizes the solenoid valve and automatically adjusts the orifice capacity to correspond with the changed rate of flow, while the integrator drive is shifted to a second motor so that the total flow is continuously measured regardless of the orifice position. The contactor in the meter casing also energizes a small solenoid operating an auxiliary recording pen indicating the multiplying factor for the corresponding flow on the chart.

In order to prevent constant shifting when the flow borders on the changeover point, the orifice is designed to shift poitions at a higher rate of flow when an increasing flow condition exists, than when the flow is decreasing.

Tanner Tank Co. Announces Device for Opening Frozen Mains

TANNER TANK CO., St. Cloud, Minn., announces a new invention and development of interest to the gas industry, in the Tanner Tank system for the opening of gas mains closed by ice formation. This system is claimed to have a decided advantage in that it completely dissolves the ice and opens the line to its full carrying capacity.

The equipment consists of a tank, burner and heater enclosed in a metal housing. The liquid "Freeze-X" is a compound of effective ice solvents which does not in any way injure the metal with which it comes in contact.

After connecting the fuel and discharge lines to the gas main and filling the tank with "Freese-X" the burner is lighted. The "Freeze-X" flows by gravity to the heater, is returned to the top of the tank, and in a short time builds up a pressure in excess of that of the gas main, opens a check valve in the discharge line and the vapor is thus admitted to the main where it attacks and clears the stoppage.

In practice a complete unit is installed at or close to each of the trouble points during the winter months to be ready for service when occasion requires. At points where freezing occurs infrequently a unit is made portable by mounting upon a truck and using hose for the connection to the main.

South Dakota Towns Vote Franchise to S. D. Public Service Co.

South Dakota Public Service Co., Rock Valley, Iowa, an Iowa Public Service Co. unit, was voted a 20-year franchise on September 10 to supply Canton, S. D., with natural gas. Work on the new system was scheduled to begin the latter part of September. Canton will be served from the district office at Rock Valley, where Walter Hynes is manager.

At a recent election Beresford, S. D., also voted a franchise to the Iowa Public Service Co. It is expected to be made ready for gas service by the latter part of October.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.,

Required by the Acts of Congress of August 24, 1912, and March 3, 1933, of *Western Gas*, published monthly at Los Angeles, California, for October 1, 1935.

State of California }
County of Los Angeles } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Jay Jenkins, who, having been duly sworn according to law, deposes and says that he is the Publisher of the *Western Gas* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Jay Jenkins, Los Angeles, Calif.
Editor—George H. Finley, Los Angeles, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Western Business Papers, Inc., Los Angeles, Calif.
Jay E. Jenkins, Los Angeles, California; James E. Jenkins, Los Angeles, California; George H. Finley, Los Angeles, Calif.; Craig Espy, Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is..... (This information is required from daily publications only.)

JAY JENKINS, Publisher.

Sworn to and subscribed before me this 24th day of September, 1935.

(SEAL) JOSEPHINE C. WHITING,
Notary Public.
(My commission expires March 25, 1936.)

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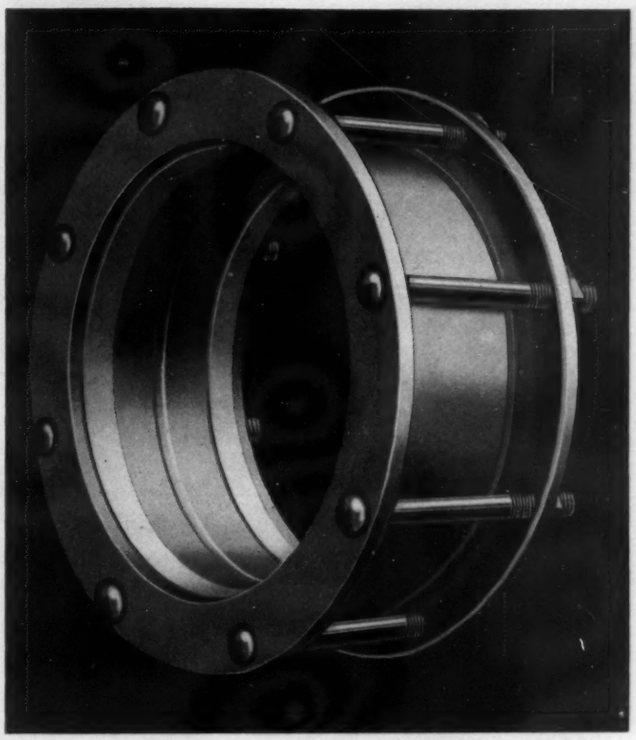

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THE NATIONAL-SUPERIOR CO.
DAYTON PIPE COUPLING DIV.
DAYTON, OHIO

Mississippi Power & Light Space Heater Campaign

THROUGHOUT the system of the Mississippi Power & Light Co., with headquarters in Jackson, Miss., the annual "Chill Chaser" space heater, cooperative sales campaign got under way September 16 to run until November 16. During the campaign No. 6245 Peerless Hearth-Fyre are featured for $9.95 cash plus installation and tax, or 95c down and the balance in 9 monthly payments.

All employees participate in the campaign by turning in prospect cards and will be paid 50c for the first heater sold and 25c for each additional heater sold to any one person. For each new meter application that results from an employee prospect card, 50c will be paid, and $1.00 for each new meter application turned in directly by an employee.

Two crews of four junior salesmen dressed in uniforms canvass the territories closing sales where they can and securing prospects for the senior salesmen. Newspaper advertising reënforces the campaign in all the towns served by the company. Pamphlets, folders, parodies on Mother Goose Rhymes, bill enclosures, billboard posters, and rubber stamps used on company and dealer letters show "Mr. Chill Chaser," a cherub in a checkered suit, emblem of the campaign. Automobile tire covers, and banners on the company's service trucks keep the "Chill Chaser" before the public. In addition, motion picture advertising is used, consisting of one teaser film and four regular sales films to be displayed in all company towns. Also, radio programs broadcast from Jackson advertise the campaign.

Individual prizes range from $25 to $5, awarded on the basis of "Chill Chaser Championship Bouts," the winners in the various weight classifications (supervisors, salesmen, etc.) to be those who exceed their particular quota by the largest margin.

Indian Terr. Illum. Oil Co. Announces Executive Changes

R. L. Morton, Jr., has been named vice-president and director of the Indian Territory Illuminating Oil Co. He has resigned as treasurer of The Empire Companies, Bartlesville, Okla., to take over his new duties.

Burdette Blue, vice-president and general manager of the Indian Territory Illuminating Oil Co., has been made president and general manager of the company, succeeding H. V. Foster, who resigned in May.

Mr. Morton became associated with the Empire organization in 1920 as assistant to the treasurer. In 1924 he was made assistant treasurer, and became treasurer in 1928, succeeding D. W. Harris, who was made general manager of the Arkansas Natural Gas Co. properties.

Lloyd Lynd, assistant treasurer of The Empire Companies, will direct activities of the treasury department.

Dealer Sales Promotion Dept. Created by Northern Illinois Co.

PUBLIC SERVICE CO. of Northern Illinois has recently created a dealer sales promotional department, with Howard T. East, assistant to vice-president of the company, in charge. The department will function separately and apart from the sales department of the company, with its sole objective to assist dealers in the sale of appliances and load building equipment.

The program of the department contemplates the rendering of close cooperation to all dealers in the territory of the company engaged in the sale of major appliances. One of the first steps taken has been to investigate dealers' complaints against the company and to eliminate them, thereby establishing the way for friendly cooperation.

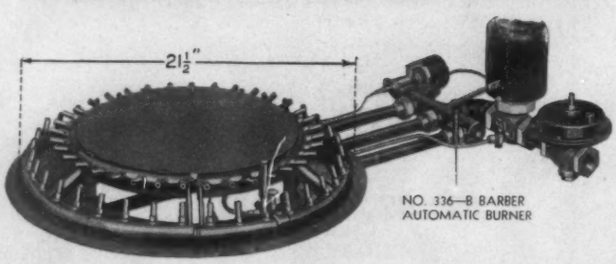
A second step in the program is being directed toward helping the dealer do a better selling job and calls for the furnishing of advice and assistance in such matters as advertising, window and store displays, hiring and training of outside salesmen.

The program further includes the promotion of active dealer participation in the appliance campaigns conducted by the company from time to time; explaining company rates and interpreting company policies to dealers; representing dealers and conserving their interests before other departments of the company.

In carrying out this program a dealer's sales promotion man has been established in the major territorial divisions of the company, with these men reporting to Mr. East.

"Reliability for 17 Years"

BARBER BURNERS!



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BARBER BURNERS are no experiment. Constantly improved for 17 years, but always adhering to the basic principle of the Barber Jet, their leadership is firmly established. The Barber Burner of today offers unparalleled value for the utility, the dealer and the consumer.

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London, Ontario, Gets Natural Gas as Construction Work Completed

CONSTRUCTION work preparatory to serving natural gas to London, Ontario, was scheduled for completion the latter part of September, the entire city to have natural gas by September 30, according to W. L. Duffield, vice-president and general manager of the City Gas Co. of London. About 10 miles of 8-inch pipe line were laid in the Dawn Field and 48 miles of 8-inch transmission line from Dawn to London. Three miles of 10-inch pipe were laid to connect the metering station with 11 miles of new mains ranging in size from 4- to 8-inch.

For change-over purposes the city was divided into two districts, one to be ready for natural gas on the 23rd and the other on the 30th. Estimated total cost of the construction work and change-over is $750,000. The transmission line crosses the Sydenham and Thames Rivers. All river crossings, bends, etc., were welded and Dresser couplings used on the balance.

"Current Trends in Public Service Industries" Course Offered

School of Commerce of Northwestern University, Chicago, is offering an evening course this term on "Current Trends in Public Service Industries." The course will analyze the effect on public utilities of new legislation such as the Wheeler-Rayburn measure. The course will be conducted by Professor Paul J. Raver, director of the Section of Rates and Research of the Illinois Commerce Commission.

DOMINATES GAS INDUSTRY

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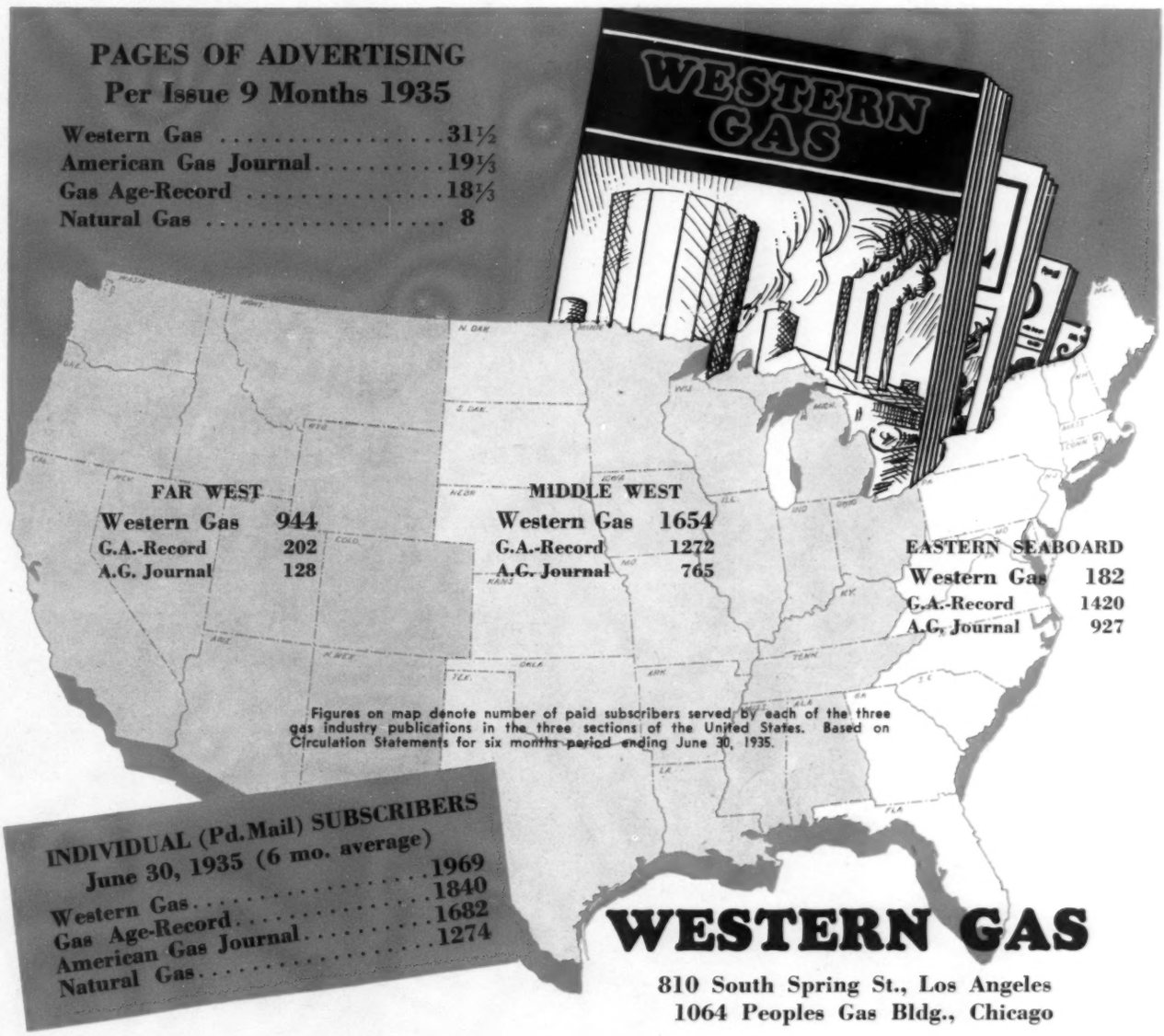
The map below shows the leadership Western Gas has gained in 10 years, in an industry over a century old! Gas sales are on the increase! Gas companies are spending huge sums for expansion and replacements! Natural gas *revenues* for May, 1935, are more than 13% above May, 1934. The largest increases occurred in the Mid-Continent Area and on the Pacific Coast—where WESTERN GAS circulation *dominates*. In these two areas, sales increased 25%! In building the circulation of WESTERN GAS, we have always directed our efforts to sections of the industry where the greatest activity exists.

As a result, WESTERN GAS circulation coverage produces sales for its advertisers. This is why WESTERN GAS carries more advertising per issue than any other publication in the gas industry!


PAGES OF ADVERTISING
Per Issue 9 Months 1935
Western Gas 31½
American Gas Journal 19⅓
Gas Age-Record 18⅓
Natural Gas 8
WESTERN GAS
FAR WEST
Western Gas 944
G.A.-Record 202
A.G. Journal 128
MIDDLE WEST
Western Gas 1654
G.A.-Record 1272
A.G. Journal 765
EASTERN SEABOARD
Western Gas 182
G.A.-Record 1420
A.G. Journal 927
Figures on map denote number of paid subscribers served by each of the three gas industry publications in the three sections of the United States. Based on Circulation Statements for six months period ending June 30, 1935.
INDIVIDUAL (Pd. Mail) SUBSCRIBERS
June 30, 1935 (6 mo. average)
Western Gas 1969
Gas Age-Record 1840
American Gas Journal 1682
Natural Gas 1274

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